February 2016

Fifth Bimonthly Report

Groundwater Monitoring Wells at the Luis Muñoz Marín International Airport (LMMIA)

CARIBBEAN AIRPORT FACILITIES, INC.

Ref.: 354-2016.02.04 5th Bimonthly Report CAF Monitoring Wells Sampling Report FOIA

Prepared by: CHES Services Corp. d/b/a Fernando L. Rodríguez, P.E. & Associates 2016

EXECUTIVE SUMMARY

As part of the *Subsurface Investigation Plan ("SIP"),* developed on March 2012 to delineate the vertical and horizontal extent of subsurface contamination with jet fuel products in the soils and groundwater in the vicinity of the Caribbean Airport Facilities, Inc. (CAF) at the Luis Muñoz Marin International Airport (LMMIA), progressive reports are to be presented on a bimonthly basis to the U.S. EPA.

This report summarizes activities performed after the installation of monitoring wells at the Luis Muñoz Marin International Airport (LMMIA) mainly in areas operated by Caribbean Airport Facilities, Inc. (CAF). This fifth bimonthly report herein summarizes events documented until the week ending Friday, February 26th, 2016.

SIGNATURE OF ENVIRONMENTAL PROFESSIONAL

A **Subsurface Investigation** effort was performed to identify any evident, current and/or potential, environmental contamination at the Luis Muñoz Marin International Airport (LMMIA) property lot, operated by Caribbean Airport Facilities, Inc. (CAF). This study was performed as per the request of **Ms. Jean Tirri,** representing CAF**.**

Environmental Professional's Signature

02/29/16
Date

Name: Fernando L. Rodríguez, P. E., SC

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Fifth Bimonthly Report

Groundwater Monitoring Wells at the Luis Muñoz Marin International Airport (LMMIA)

1.0 INTRODUCTION

The period encompassed within the past two (2) months includes:

> The first week of January (week ending Friday, January 8, 2016) through the last week of February (week ending Friday, February 26, 2016).

Within this period, the **Fourth Groundwater Bimonthly Sampling** event was scheduled and performed. Daily Activities for both sampling days are herein included (January 12-13, 2016). No major weather nor airport operational delays occurred during those two (2) days of sampling activities. All sampling and QA/QC procedures were followed by all project teams involved.

As detailed by the Third Party Validator, some results were identified by the laboratory as with quality issues but none of the results were rejected or rendered invalid for decision taking purposes. Tabulated Results of this sampling are included as an attachment to this section. In addition, a comparison table is included showing results from the initial sampling (May 2015) and the bimonthly sampling events performed on September 2015 and November 2015 for simplified comparison with this (January 2016) and future results.

Significant reduction in TPH-GRO or volatile range levels are seen throughout both shallow wells and deep wells. This parameter represents lighter petroleum hydrocarbons than TPH-DRO, also referred to as the semivolatile range. Spikes or reemergence in TPH-GRO results have been seen in several areas since the initial sampling.

The TPH-DRO results show increases and decreases confirming transmissivity or movement of product. Increases are seen throughout the grid with the exception of wells: MW3D, MW7S, MW9D, MW10D, MW11S, and MW11D.

The corresponding Third Party Data Validation Report for these results is included at the end of this report (after the References). In addition, Monthly Groundwater Levels Measurements recorded during this period are included with Daily Activities Reports included in Section 2.0 as well as an updated copy of the Groundwater Levels Measurement Database in Section 3.0.

Caribbean Airport Facilities, Inc. - Subsurface Investigation Project

Tabulated Data received from: Advanced Environmental Laboratories, Inc.

Bimonthly Groundwater Sampling Results

				Analytical Parameters					
			Sampling Date January *2016*	Total Petroleum Hydrocarbons-Gasoline Range Organics (TPH-GRO) C10-C28 microwave			Total Petroleum Hydrocarbons-Diesel Range Organics (TPH-DRO) C6-C10		
			Units	µg/L			µg/L		
				Classified as J by the laboratory as with quality issues; none rejected or invalid for decision taking purposes.					
	Lab Group Number	**Lab Sample #**	**Date Collected**	*Result*	*Method Detection Limit (MDL)*	*Limit of Quantitation (LOQ)*	*Dry Result*	*Method Detection Limit (MDL)*	*Limit of Quantitation (LOQ)*
MW11D-W01	1623189	8204475	1/12/2016	ND	20	50	66	31	96
MW11S-W01	1623189	8204476	1/12/2016	ND	20	50	610	31	96
MW10D-W01	1623189	8204477	1/12/2016	ND	20	50	66	31	96
MW10S-W01	1623189	8204478	1/12/2016	ND	20	50	57	31	95
MW6S-W01	1623189	8204479	1/12/2016	ND	20	50	120	31	96
Field Blank	1623189	8204480	1/12/2016	ND	20	50	ND	30	95
Equipment Blank	1623189	8204481	1/12/2016	ND	20	50	190	30	95
MW3S-W01	1623189	8204482	1/12/2016	ND	20	50	72	30	94
MW3S-W01 MS	1623189	8204483	1/12/2016	1,200	20	50	1,200	31	97
MW3S-W01 MSD	1623189	8204484	1/12/2016	1,200	20	50	1,400	31	97
MW9D-W01	1623189	8204485	1/12/2016	ND	20	50	380	31	96
MW9S-W01	1623189	8204486	1/12/2016	ND	20	50	860	30	94
MW5D-W01	1623189	8204487	1/12/2016	ND	20	50	190	30	94
MW5D-W01 D	1623189	8204488	1/12/2016	ND	20	50	170	31	96
MW5S-W01	1623189	8204489	1/12/2016	ND	20	50	150	31	96
MW7D-W01	1623189	8204490	1/12/2016	30	20	50	1,000	31	97
MW7S-W01	1623189	8204491	1/12/2016	ND	20	50	180	30	94
MW6D-W01	1623189	8204492	1/12/2016	ND	20	50	140	31	95
MW6S-W01 D	1623189	8204493	1/12/2016	ND	20	50	51	31	96
MW3D-W01	1623189	8204494	1/12/2016	ND	20	50	60	30	94
Trip Blank	1623189	8204495	1/12/2016	ND	20	50	-	-	-

Caribbean Airport Facilities, Inc. - Subsurface Investigation Project

Tabulated Data received from: Advanced Environmental Laboratories, Inc.

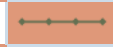
Bimonthly Groundwater Sampling Results

				Analytical Parameters					
			Sampling Date January *2016*	Total Petroleum Hydrocarbons-Gasoline Range Organics (TPH-GRO) C10-C28 microwave			Total Petroleum Hydrocarbons-Diesel Range Organics (TPH-DRO) C6-C10		
			Units	µg/L			µg/L		
	Lab Group Number	**Lab Sample #**	**Date Collected**	*Result*	*Method Detection Limit (MDL)*	*Limit of Quantitation (LOQ)*	*Result*	*Method Detection Limit (MDL)*	*Limit of Quantitation (LOQ)*
MW4D-W01	1623732	8207313	1/13/2016	ND	20	50	140	31	96
MW4S-W01	1623732	8207314	1/13/2016	ND	100	250	4,700	31	95
MW2D-W01	1623732	8207315	1/13/2016	45	20	50	220	31	96
MW2S-W01	1623732	8207316	1/13/2016	ND	100	250	1,100	30	95
MW1S-W01	1623732	8207317	1/13/2016	ND	20	50	390	30	95
MW1D-W01	1623732	8207318	1/13/2016	28	20	50	130	31	95
MW8D-W01	1623732	8207319	1/13/2016	31	20	50	490	30	95
MW8S-W01	1623732	8207320	1/13/2016	ND	20	50	150	30	95
MW8S-W01 MS	1623732	8207321	1/13/2016	1,200	20	50	1,400	30	94
MW8S-W01 MSD	1623732	8207322	1/13/2016	1,200	20	50	1,600	30	95
Equipment Blank	1623732	8207323	1/13/2016	ND	20	50	140	31	97
Field Blank	1623732	8207324	1/13/2016	ND	20	50	ND	31	96
Trip Blank	1623732	8207325	1/13/2016	ND	20	50	-	-	-

Caribbean Airport Facilities, Inc.
Subsurface Investigation Project

Data Comparison Tables. Tabulated Data received from: Advanced Environmental Laboratories, Inc.

TPH-GRO

Shallow Wells	TREND	May-15	Sep-15	Nov-15	Jan-16	Mar-16	May-16
MW1-S		2100	ND	ND	ND		
MW2-S		770	ND	ND	ND		
MW3-S		610	ND	ND	ND		
MW4-S		5300	ND	ND	ND		
MW5-S		76	ND	ND	ND		
MW6-S		990	ND	ND	ND		
MW7-S		210	ND	ND	ND		
MW8-S		270	ND	ND	ND		
MW9-S		940	ND	ND	ND		
MW10-S		210	ND	ND	ND		
MW11-S		ND	ND	ND	ND		
Max Result TPH-GRO		**5300**	**ND**	**ND**	**ND**		

TPH-GRO

Deep Wells	TREND	May-15	Sep-15	Nov-15	Jan-16	Mar-16	May-16
MW1-D		240	26	47	28		
MW2-D		360	25	ND	45		
MW3-D		410	ND	ND	ND		
MW4-D		860	ND	ND	ND		
MW5-D		140	24	ND	ND		
MW6-D		390	23	ND	ND		
MW7-D		ND	ND	ND	30		
MW8-D		540	ND	ND	31		
MW9-D		760	ND	ND	ND		
MW10-D		89	ND	ND	ND		
MW11-D		270	ND	ND	ND		
Max Result TPH-GRO		**860**	**26**	**47**	**45**		

Caribbean Airport Facilities, Inc.
Subsurface Investigation Project

Data Comparison Tables. Tabulated Data received from: Advanced Environmental Laboratories, Inc.

TPH-DRO

Shallow Wells	TREND	May-15	Sep-15	Nov-15	Jan-16	Mar-16	May-16
MW1-S		50	140	160	390		
MW2-S		43	410	630	1100		
MW3-S		ND	48	68	72		
MW4-S		35	3600	3500	4700		
MW5-S		28	67	150	150		
MW6-S		140	270	-	120		
MW7-S		58	410	190	180		
MW8-S		ND	ND	57	150		
MW9-S		24	400	620	860		
MW10-S		ND	ND	ND	57		
MW11-S		ND	620	610	610		
Max Result TPH-DRO		**140**	**3600**	**3500**	**4700**		

TPH-DRO

Deep Wells	TREND	May-15	Sep-15	Nov-15	Jan-16	Mar-16	May-16
MW1-D		20	41	67	130		
MW2-D		33	75	92	220		
MW3-D		ND	62	92	60		
MW4-D		30	36	84	140		
MW5-D		ND	-	150	190		
MW6-D		75	95	110	140		
MW7-D		ND	570	720	1000		
MW8-D		40	100	240	490		
MW9-D		160	200	470	380		
MW10-D		ND	47	77	66		
MW11-D		ND	31	110	66		
Max Result TPH-DRO		**160**	**570**	**720**	**1000**		

Fifth Bimonthly Report

Groundwater Monitoring Wells at the Luis Muñoz Marin International Airport (LMMIA)

2.0 DAILY ACTIVITIES REPORTS

The following reports include relevant daily notes documented by the "CHES Services Corp. Team". Historical weather data has been included for up to two (2) days prior to the groundwater level readings event, as provided by Weather Underground [1].

Weather Station ID: ISANJUAN16

In addition, observed water levels reported by NOAA's Center for Operational Oceanographic Products and Services (CO-OPS) [2].

NOAA/NOS/CO-OPS Station - San Juan, PR - Station ID: 9755371

Established:	Mar 04, 1962
Time Meridian:	60° W
Present Installation:	Mar 25, 1989
Date Removed:	N/A
Water Level Max (ref MHHW):	2.77 Sep 18, 1989
Water Level Min (ref MLLW):	-1.09 Dec 20, 1968
Mean Range:	1.1 ft.
Diurnal Range:	1.58 ft.

Daily Activities Report

Prepared by: CHES Services Corp. d/b/a: Fernando L. Rodríguez, PE & Associates
Chemical/Environmental Engineering & Industrial Hygiene Consultants
www.flraches.com

Project:	CAF MW Bimonthly Sampling Event		
Address:	LMMIA	**Date:**	January 12, 2016

Phone:	787-751-7810	**CHES Representative:**	HRM/NDM/DP

Time	Location	Activity / Observations
6:30	CAF1	CHES team working on setting up for the day
7:30	MW11	Arrived for sampling at location 11
8:23	MW10	Arrived for sampling at location 10
9:04	MW6	Arrived for sampling at location 6
9:35	Near MW5 & MW7	UPS flight arrived for loading.
9:40	MW6	Done
9:51	MW3	Arrived and strat to purged.
11:57	MW9	Arrived for sampling at location 9
12:30	Near MW9 &MW7	UPS flight arrived for loading.
12:40	MW5	Arrived for samplinf at location 5
13:25	MW7	Arrived for sampling at location 7
14:05	CAF1	Prepping coolers
16:00	CAF1	UPS working on shipping.

Moving Forward (Next Steps)

Action Item	Deadline	%Completion	Responsible Party
N/A	N/A	N/A	N/A

Weather History

Two (2) days prior to GW Level Monitoring event

Sunday, January 10, 2016

« Previous Day Next Day »

Daily | Weekly | Monthly | Custom

	Actual	Average	Record
Temperature			
Mean Temperature	27 °C	26 °C	
Max Temperature	29 °C	28 °C	31 °C (2003)
Min Temperature	24 °C	22 °C	17 °C (1917)
Degree Days			
Heating Degree Days	0	0	
Month to date heating degree days	0	0	
Since 1 July heating degree days	0	0	
Cooling Degree Days	15	13	
Month to date cooling degree days	138	130	
Year to date cooling degree days	138	130	
Growing Degree Days	30 (Base 50)		
Moisture			
Dew Point	22 °C		
Average Humidity	78		
Maximum Humidity	87		
Minimum Humidity	69		
Precipitation			
Precipitation	0.00 mm	3.30 mm	4.93 mm (1937)
Month to date precipitation	0.39	1.42	
Year to date precipitation	0.39	1.42	

Ref: Weather Underground

Special Comments

N/A

Daily Activities Report

Prepared by: CHES Services Corp. d/b/a: Fernando L. Rodríguez, PE & Associates
Chemical/Environmental Engineering & Industrial Hygiene Consultants
www.flraches.com

Project:	CAF MW Bimonthly Sampling Event		
Address:	LMMIA	**Date:**	January 12, 2016

Weather History

One (1) day prior to GW Level Monitoring event

Special Comments

N/A

Monday, January 11, 2016

« Previous Day | Next Day »

Daily | Weekly | Monthly | Custom

	Actual	Average	Record
Temperature			
Mean Temperature	**26** °C	**26** °C	
Max Temperature	**28** °C	**28** °C	**33** °C (1982)
Min Temperature	**24** °C	**22** °C	**16** °C (1965)
Degree Days			
Heating Degree Days	0	0	
Month to date heating degree days		0	
Since 1 July heating degree days		0	
Cooling Degree Days	14	13	
Month to date cooling degree days		143	
Year to date cooling degree days		143	
Growing Degree Days	28 (Base 50)		
Moisture			
Dew Point	**21** °C		
Average Humidity	78		
Maximum Humidity	94		
Minimum Humidity	59		
Precipitation			
Precipitation	**3.05** mm	**3.30** mm	**2.21** mm (1902)
Month to date precipitation		1.55	
Year to date precipitation		1.55	

Ref: Weather Underground

Weather History

Day of GW Level Monitoring event

Special Comments

N/A

Tuesday, January 12, 2016

« Previous Day | Next Day »

Daily | Weekly | Monthly | Custom

	Actual	Average	Record
Temperature			
Mean Temperature	**26** °C	**26** °C	
Max Temperature	**28** °C	**28** °C	**31** °C (1981)
Min Temperature	**22** °C	**22** °C	**17** °C (1965)
Degree Days			
Heating Degree Days	0	0	
Month to date heating degree days	0	0	
Since 1 July heating degree days	0	0	
Cooling Degree Days	13	13	
Month to date cooling degree days	165	156	
Year to date cooling degree days	165	156	
Growing Degree Days	27 (Base 50)		
Moisture			
Dew Point	**21** °C		
Average Humidity	78		
Maximum Humidity	90		
Minimum Humidity	65		
Precipitation			
Precipitation	**0.00** mm	**3.30** mm	**4.80** mm (1958)
Month to date precipitation	0.50	1.68	
Year to date precipitation	0.50	1.68	

Ref: Weather Underground

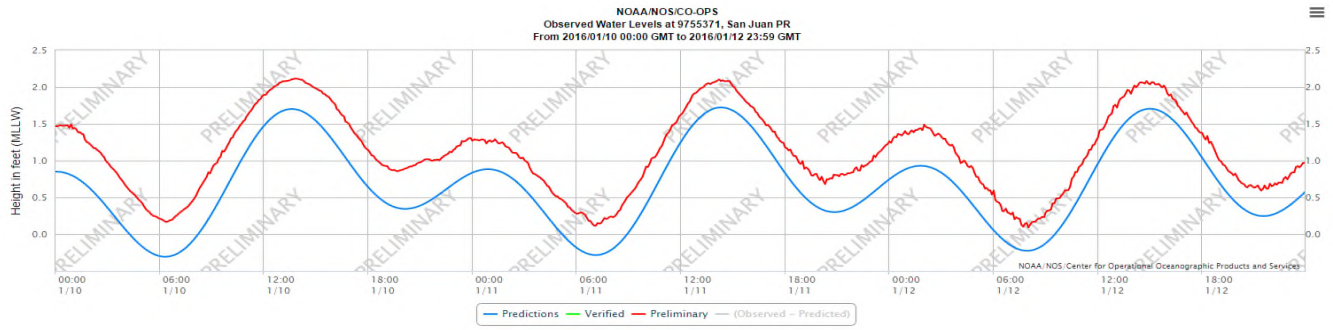
Daily Activities Report

Prepared by: CHES Services Corp. d/b/a: Fernando L. Rodríguez, PE & Associates
Chemical/Environmental Engineering & Industrial Hygiene Consultants
www.flraches.com

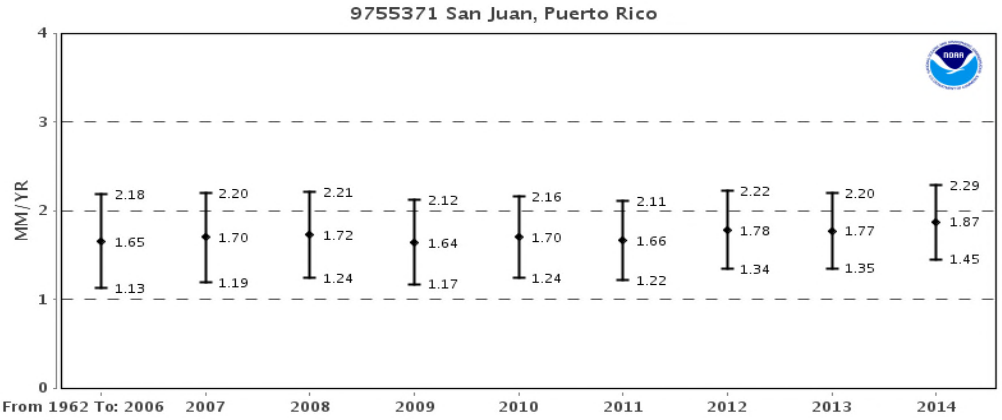
Project:	CAF MW Bimonthly Sampling Event		
Address:	LMMIA	**Date:**	January 12, 2016

Water Levels

Two (2) days prior to GW Level Monitoring event until day of event



Previous Mean Water Level Trends



Ref: National Oceanic and Atmospheric Administration

Daily Activities Report

Prepared by: CHES Services Corp. d/b/a: Fernando L. Rodríguez, PE & Associates
Chemical/Environmental Engineering & Industrial Hygiene Consultants
www.flraches.com

Project:	CAF MW Bimonthly Sampling Event		
Address:	LMMIA	**Date:**	January 13, 2015

Phone:	787-751-7810	**CHES Representative:**	HRM/NDM/DP

Time	Location	Activity / Observations
6:50	CAF1	CHES team working on setting up for the day
7:15	MW4	Arrived for sampling at location 4
8:02	MW2	Arrived for sampling at location 2
8:33	MW2	Paused due to pump malfunction.
9:15	MW2	J&S back with equipmnet to fix pump.
9:55	MW2	Finished fixing pump continuing sampling at 2S.
10:08	MW1	Arrived for sampling at location 1
10:51	MW8	Arrived for sampling at location 8
11:30	Near MW8	Prepping coolers
13:00	CAF1	Working on shipping UPS

Moving Forward (Next Steps)

Action Item	Deadline	%Completion	Responsible Party
N/A	N/A	N/A	N/A

Weather History

Two (2) days prior to GW Level Monitoring event

Monday, January 11, 2016

« Previous Day Next Day »

Daily | Weekly | Monthly | Custom

	Actual	Average	Record
Temperature			
Mean Temperature	**26** °C	**26** °C	
Max Temperature	**28** °C	**28** °C	**33** °C (1982)
Min Temperature	**24** °C	**22** °C	**16** °C (1965)
Degree Days			
Heating Degree Days	0	0	
Month to date heating degree days		0	
Since 1 July heating degree days		0	
Cooling Degree Days	14	13	
Month to date cooling degree days		143	
Year to date cooling degree days		143	
Growing Degree Days	28 (Base 50)		
Moisture			
Dew Point	**21** °C		
Average Humidity	78		
Maximum Humidity	94		
Minimum Humidity	59		
Precipitation			
Precipitation	**3.05** mm	**3.30** mm	**2.21** mm (1902)
Month to date precipitation		1.55	
Year to date precipitation		1.55	

Ref: Weather Underground

Special Comments

N/A

Daily Activities Report

Prepared by: CHES Services Corp. d/b/a: Fernando L. Rodríguez, PE & Associates
Chemical/Environmental Engineering & Industrial Hygiene Consultants
www.flraches.com

Project:	CAF MW Bimonthly Sampling Event		
Address:	LMMIA	**Date:**	January 13, 2015

Weather History	
One (1) day prior to GW Level Monitoring event	**Special Comments**
Tuesday, January 12, 2016 « Previous Day Next Day » Daily | Weekly | Monthly | Custom	N/A

	Actual	Average	Record
Temperature			
Mean Temperature	**26** °C	**26** °C	
Max Temperature	**28** °C	**28** °C	**31** °C [1981]
Min Temperature	**22** °C	**22** °C	**17** °C [1965]
Degree Days			
Heating Degree Days	0	0	
Month to date heating degree days	0	0	
Since 1 July heating degree days	0	0	
Cooling Degree Days	13	13	
Month to date cooling degree days	165	156	
Year to date cooling degree days	165	156	
Growing Degree Days	27 [Base 50]		
Moisture			
Dew Point	**21** °C		
Average Humidity	78		
Maximum Humidity	90		
Minimum Humidity	65		
Precipitation			
Precipitation	**0.00** mm	**3.30** mm	**4.80** mm [1958]
Month to date precipitation	0.50	1.68	
Year to date precipitation	0.50	1.68	

Ref: Weather Underground

Weather History	
Day of GW Level Monitoring event	**Special Comments**
Wednesday, January 13, 2016 « Previous Day Next Day » Daily | Weekly | Monthly | Custom	N/A

	Actual	Average	Record
Temperature			
Mean Temperature	**25** °C	**26** °C	
Max Temperature	**27** °C	**28** °C	**31** °C [1984]
Min Temperature	**22** °C	**22** °C	**18** °C [1960]
Degree Days			
Heating Degree Days	0	0	
Month to date heating degree days		0	
Since 1 July heating degree days		0	
Cooling Degree Days	12	13	
Month to date cooling degree days		169	
Year to date cooling degree days		169	
Growing Degree Days	28 [Base 50]		
Moisture			
Dew Point	**19** °C		
Average Humidity	70		
Maximum Humidity	84		
Minimum Humidity	52		
Precipitation			
Precipitation	**0.0** mm	**3.30** mm	**6.83** mm [1902]
Month to date precipitation		1.81	
Year to date precipitation		1.81	

Ref: Weather Underground

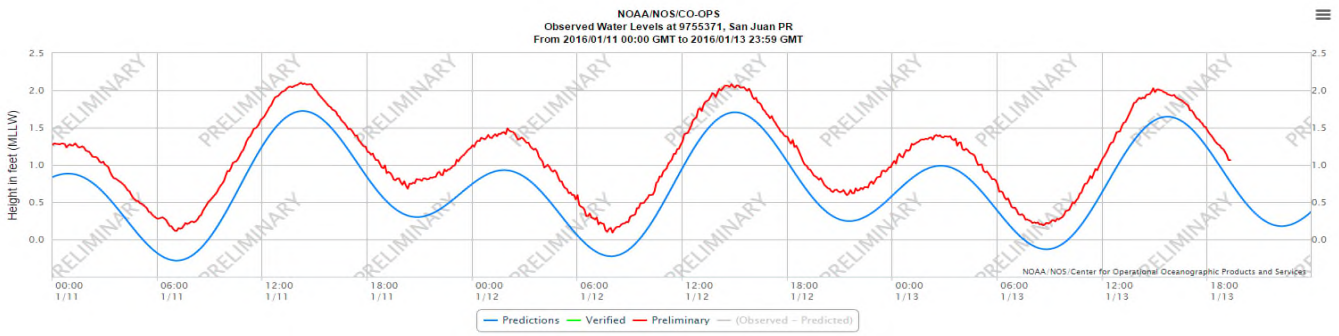
Daily Activities Report

Prepared by: CHES Services Corp. d/b/a: Fernando L. Rodríguez, PE & Associates
Chemical/Environmental Engineering & Industrial Hygiene Consultants
www.flraches.com

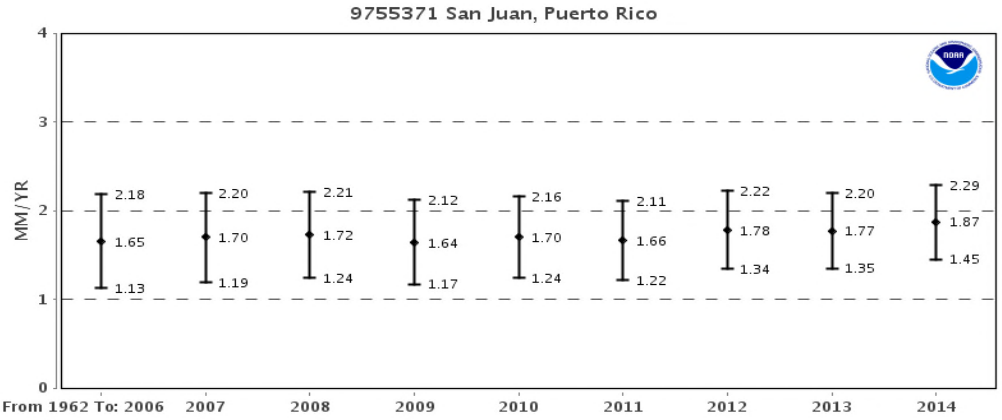
Project:	CAF MW Bimonthly Sampling Event		
Address:	LMMIA	**Date:**	January 13, 2015

Water Levels

Two (2) days prior to GW Level Monitoring event until day of event



Previous Mean Water Level Trends



Ref: National Oceanic and Atmospheric Administration

Daily Activities

Prepared by: CHES Services Corp. d/b/a: Fernando L. Rodríguez, PE & Associate:
Chemical/Environmental Engineering & Industrial Hygiene Consultant:
www.flraches.com

Project:	CAF Groundwater Monitoring Wells		
Address:	LMMIA	**Date:**	January-16

Weather History

Climatological Data for SAN JUAN L M MARIN AP, PR - January 2016

Click column heading to sort ascending, click again to sort descending.

Date	Temperature				HDD	CDD	Precipitation	New Snow	Snow Depth
	Maximum	Minimum	Average	Departure					
2016-01-01	83	73	78.0	0.1	0	13	0.02	0.0	0
2016-01-02	83	71	77.0	-0.9	0	12	T	0.0	0
2016-01-03	85	71	78.0	0.1	0	13	0.03	0.0	0
2016-01-04	87	72	79.5	1.7	0	15	0.04	0.0	0
2016-01-05	84	72	78.0	0.2	0	13	0.00	0.0	0
2016-01-06	84	74	79.0	1.2	0	14	0.30	0.0	0
2016-01-07	87	72	79.5	1.8	0	15	0.00	0.0	0
2016-01-08	85	74	79.5	1.8	0	15	0.00	0.0	0
2016-01-09	83	73	78.0	0.3	0	13	0.00	0.0	0
2016-01-10	84	75	79.5	1.8	0	15	0.00	0.0	0
2016-01-11	83	75	79.0	1.4	0	14	0.11	0.0	0
2016-01-12	83	72	77.5	-0.1	0	13	0.00	0.0	0
2016-01-13	83	73	78.0	0.4	0	13	0.00	0.0	0
2016-01-14	83	73	78.0	0.4	0	13	0.00	0.0	0
2016-01-15	85	71	78.0	0.5	0	13	T	0.0	0
2016-01-16	83	74	78.5	1.0	0	14	T	0.0	0
2016-01-17	85	73	79.0	1.5	0	14	0.00	0.0	0
2016-01-18	85	74	79.5	2.0	0	15	0.00	0.0	0
2016-01-19	84	74	79.0	1.5	0	14	0.19	0.0	0
2016-01-20	84	73	78.5	1.0	0	14	T	0.0	0
2016-01-21	85	72	78.5	1.0	0	14	0.01	0.0	0
2016-01-22	85	72	78.5	1.0	0	14	0.03	0.0	0
2016-01-23	86	73	79.5	2.0	0	15	0.00	0.0	0
2016-01-24	87	74	80.5	3.0	0	16	0.00	0.0	0
2016-01-25	82	74	78.0	0.5	0	13	0.18	0.0	0
2016-01-26	83	72	77.5	0.0	0	13	0.26	0.0	0
2016-01-27	85	73	79.0	1.5	0	14	0.00	0.0	0
2016-01-28	86	73	79.5	2.0	0	15	0.05	0.0	0
2016-01-29	88	72	80.0	2.5	0	15	0.00	0.0	0
2016-01-30	83	73	78.0	0.5	0	13	0.34	0.0	0
2016-01-31	84	73	78.5	1.0	0	14	0.04	0.0	0
Sum	2617	2260	-	-	0	431	1.60	0.0	-
Average	84.4	72.9	78.7	1.1	-	-	-	-	0.0
Normal	83.2	72.0	77.6	-	0	391	3.76	0.0	-

Ref: NOAA NWSF; NOWData - NOAA Online Weather Dat; San Juan LMMIA Statio

Daily Activities Report

Prepared by: CHES Services Corp. d/b/a: Fernando L. Rodríguez, PE & Associates
Chemical/Environmental Engineering & Industrial Hygiene Consultants
www.flraches.com

Project:	CAF MW Weekly Groundwater levels reading		
Address:	LMMIA	**Date:**	February 18, 2016

Phone:	787-751-7810	**CHES Representative:**	NDM

Time	Location	Activity / Observations
7:30	CAF1	CHES representative arrived winth J&S personnel
7:48	MW3	Arrived for levels readings.
8:00	MW5	Arrived for levels readings.
8:07	MW5	Done
8:09	MW7	Arrived for levels readings.
8:15	MW7	Done
8:16	MW9	Arrived for levels readings and the wells are blocked with UPS car.
8:26	MW9	Done
8:28	MW10	Arrived for levels readings.
8:34	MW10	Done
8:36	MW11	Arrived for levels readings.
8:42	MW11	Done
8:48	MW6	Arrived for levels readings.
8:53	MW6	Done
9:04	MW1	Arrived for levels readings.
9:09	MW1	Done
9:11	MW4	Arrived for levels readings.
9:15	MW4	Done
9:16	MW2	Arrived for levels readings.
9:20	MW2	Done
9:24	MW8	Arrived for levels readings.
9:27	MW8	Done
9:35	CAF1	CHES and J&S Personnel Checked out

Moving Forward (Next Steps)

Action Item	Deadline	%Completion	Responsible Party
N/A	N/A	N/A	N/A

Daily Activities Report

Prepared by: CHES Services Corp. d/b/a: Fernando L. Rodríguez, PE & Associates
Chemical/Environmental Engineering & Industrial Hygiene Consultants
www.flraches.com

Project:	CAF MW Weekly Groundwater levels reading		
Address:	LMMIA	**Date:**	February 18, 2016

Weather History

Two (2) days prior to GW Level Monitoring event

Special Comments

N/A

Tuesday, February 16, 2016

« Previous Day | Next Day »

Daily | Weekly | Monthly | Custom

	Actual	Average	Record
Temperature			
Mean Temperature	**26** °C	**26** °C	
Max Temperature	**30** °C	**29** °C	**32** °C (1991)
Min Temperature	**22** °C	**22** °C	**17** °C (1962)
Degree Days			
Heating Degree Days	0	0	
Month to date heating degree days	0	0	
Since 1 July heating degree days	0	0	
Cooling Degree Days	14	13	
Month to date cooling degree days	221	208	
Year to date cooling degree days	652	599	
Growing Degree Days	30 (Base 50)		
Moisture			
Dew Point	**21** °C		
Average Humidity	73		
Maximum Humidity	87		
Minimum Humidity	59		
Precipitation			
Precipitation	**0.76** mm	**2.29** mm	**3.17** mm (1989)
Month to date precipitation	3.15	1.46	
Year to date precipitation	4.75	5.22	

Ref: Weather Underground

Weather History

One (1) day prior to GW Level Monitoring event

Special Comments

N/A

Wednesday, February 17, 2016

« Previous Day | Next Day »

Daily | Weekly | Monthly | Custom

	Actual	Average	Record
Temperature			
Mean Temperature	**27** °C	**26** °C	
Max Temperature	**29** °C	**29** °C	**33** °C (1983)
Min Temperature	**23** °C	**22** °C	**16** °C (1962)
Degree Days			
Heating Degree Days	0	0	
Month to date heating degree days	0	0	
Since 1 July heating degree days	0	0	
Cooling Degree Days	15	13	
Month to date cooling degree days	236	221	
Year to date cooling degree days	667	612	
Growing Degree Days	28 (Base 50)		
Moisture			
Dew Point	**22** °C		
Average Humidity	79		
Maximum Humidity	88		
Minimum Humidity	69		
Precipitation			
Precipitation	**2.29** mm	**2.03** mm	**5.41** mm (1989)
Month to date precipitation	3.24	1.54	
Year to date precipitation	4.84	5.30	

Ref: Weather Underground

Daily Activities Report

Prepared by: CHES Services Corp. d/b/a: Fernando L. Rodríguez, PE & Associates
Chemical/Environmental Engineering & Industrial Hygiene Consultants
www.flraches.com

Project:	CAF MW Weekly Groundwater levels reading		
Address:	LMMIA	**Date:**	February 18, 2016

Weather History

Day of GW Level Monitoring event

Special Comments

N/A

Thursday, February 18, 2016

« Previous Day | Next Day »

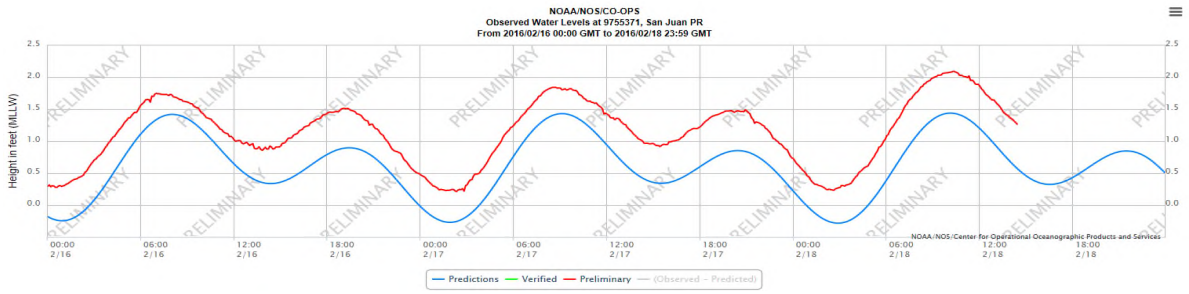
Daily | Weekly | Monthly | Custom

	Actual	Average	Record
Temperature			
Mean Temperature	24 °C	26 °C	
Max Temperature	27 °C	29 °C	32 °C (1983)
Min Temperature	23 °C	22 °C	17 °C (1962)
Degree Days			
Heating Degree Days	0	0	
Month to date heating degree days		0	
Since 1 July heating degree days		0	
Cooling Degree Days	12	13	
Month to date cooling degree days		234	
Year to date cooling degree days		625	
Growing Degree Days	27 (Base 50)		
Moisture			
Dew Point	22 °C		
Average Humidity	82		
Maximum Humidity	87		
Minimum Humidity	72		
Precipitation			
Precipitation	0.0 mm	2.03 mm	1.65 mm (1991)
Month to date precipitation		1.62	
Year to date precipitation		5.38	

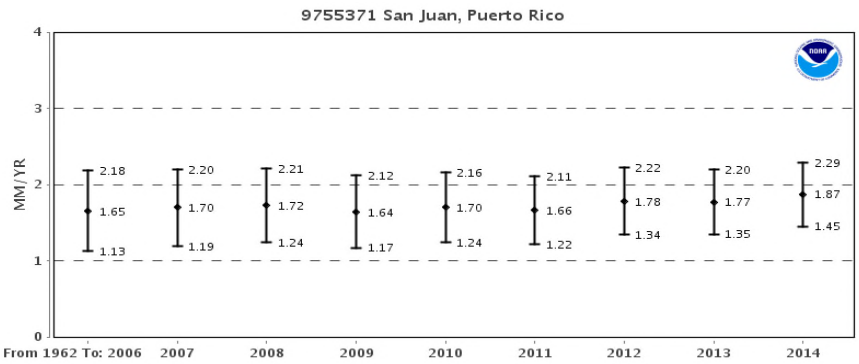
Ref: Weather Underground

Water Levels

Two (2) days prior to GW Level Monitoring event until day of event



Previous Mean Water Level Trends



Ref: National Oceanic and Atmospheric Administration

Daily Activities

Prepared by: CHES Services Corp. d/b/a: Fernando L. Rodríguez, PE & Associate:
Chemical/Environmental Engineering & Industrial Hygiene Consultant:
www.flraches.com

Project:	CAF Groundwater Monitoring Wells		
Address:	LMMIA	**Date:**	February-16

Weather History

Climatological Data for SAN JUAN L M MARIN AP, PR - February 2016

Click column heading to sort ascending, click again to sort descending.

Date	Temperature				HDD	CDD	Precipitation	New Snow	Snow Depth
	Maximum	Minimum	Average	Departure					
2016-02-01	86	73	79.5	2.0	0	15	0.00	0.0	0
2016-02-02	84	73	78.5	1.0	0	14	0.00	0.0	0
2016-02-03	83	72	77.5	-0.1	0	13	0.15	0.0	0
2016-02-04	83	73	78.0	0.4	0	13	0.02	0.0	0
2016-02-05	83	71	77.0	-0.6	0	12	0.61	0.0	0
2016-02-06	87	70	78.5	0.9	0	14	0.19	0.0	0
2016-02-07	85	70	77.5	-0.1	0	13	0.40	0.0	0
2016-02-08	87	73	80.0	2.3	0	15	0.00	0.0	0
2016-02-09	86	74	80.0	2.3	0	15	0.00	0.0	0
2016-02-10	87	74	80.5	2.8	0	16	0.00	0.0	0
2016-02-11	85	73	79.0	1.3	0	14	0.01	0.0	0
2016-02-12	83	72	77.5	-0.3	0	13	0.14	0.0	0
2016-02-13	85	73	79.0	1.2	0	14	0.00	0.0	0
2016-02-14	83	72	77.5	-0.3	0	13	0.68	0.0	0
2016-02-15	84	71	77.5	-0.3	0	13	0.92	0.0	0
2016-02-16	86	72	79.0	1.1	0	14	0.03	0.0	0
2016-02-17	85	74	79.5	1.6	0	15	0.09	0.0	0
2016-02-18	87	75	81.0	3.1	0	16	0.00	0.0	0
2016-02-19	84	74	79.0	1.0	0	14	0.14	0.0	0
2016-02-20	83	72	77.5	-0.5	0	13	0.07	0.0	0
2016-02-21	85	75	80.0	2.0	0	15	0.13	0.0	0
2016-02-22	87	73	80.0	1.9	0	15	T	0.0	0
2016-02-23	87	74	80.5	2.4	0	16	T	0.0	0
2016-02-24	86	75	80.5	2.4	0	16	0.00	0.0	0
2016-02-25	86	73	79.5	1.3	0	15	0.00	0.0	0
2016-02-26	86	75	80.5	2.3	0	16	T	0.0	0
2016-02-27	85	71	78.0	-0.2	0	13	0.00	0.0	0
2016-02-28	82	73	77.5	-0.8	0	13	0.30	0.0	0
2016-02-29	84	73	78.5	0.2	0	14	0.00	0.0	0
Sum	2464	2113	-	-	0	412	3.88	0.0	-
Average	85.0	72.9	78.9	1.0	-	-	-	-	0.0
Normal	83.7	72.0	77.9	-	0	360	2.39	0.0	-

Ref: NOAA NWSF; NOWData - NOAA Online Weather Dat; San Juan LMMIA Statio

Fifth Bimonthly Report

Groundwater Monitoring Wells at the Luis Muñoz Marin International Airport (LMMIA)

3.0 GROUNDWATER LEVELS DATABASE

The following groundwater levels database includes data corresponding to the twenty-two (22) wells installed at the LMMIA.

Groundwater Monitoring Wells Construction and Sampling Project

Groundwater (GW) Level Readings

GW Level Monitoring Start: May 18, 2015 **GW Level Readings To-Date:** February 23, 2016

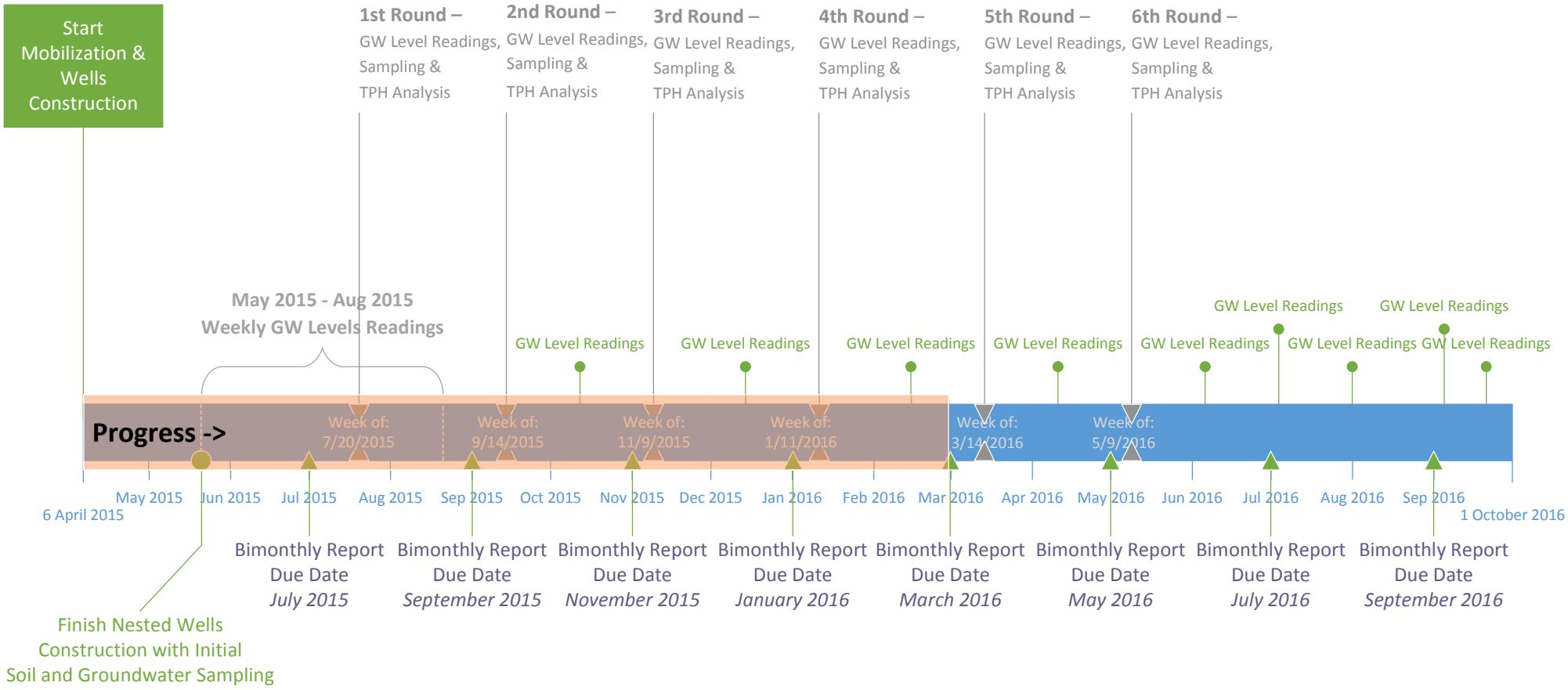
Well ID	MW1S	MW1D	MW2S	MW2D	MW3S	MW3D	MW4S	MW4D	MW5S	MW5D	MW6S	MW6D	MW7S	MW7D	MW8S	MW8D	MW9S	MW9D	MW10S	MW10D	MW11S	MW11D
Top of Casing Elevation (feet)	9.33	9.96	12.00	11.86	11.42	10.45	8.39	7.51	10.18	13.22	7.09	8.93	10.82	8.05	9.69	10.95	12.71	11.30	9.57	10.16	9.39	9.09
Well depth (feet)	10	20.5	10	20	10	20	10	20.5	10	20	10	20.5	10	20.5	10	20.5	10	20.5	10	20.5	12	23.5
Week of																						
May 18, 2015	6.25	6.33	4.58	4.33	6.33	6.40	3.42	2.67	6.75	8.67	6.25	6.33	6.00	6.50	2.67	3.00	7.00	7.58	6.75	6.75	6.25	9.00
May 25, 2015	6.00	6.00	4.08	4.00	6.40	6.50	2.92	2.92	NR	6.84	5.84	6.50	5.92	6.92	3.00	3.08	6.92	7.16	6.50	6.68	7.16	7.00
June 1, 2015	6.25	6.40	4.00	3.50	6.25	6.16	3.00	3.00	6.00	6.67	5.50	6.00	5.67	6.08	2.67	2.16	5.40	7.00	6.25	6.25	6.58	7.00
June 8, 2015	5.75	5.92	4.08	3.84	7.00	7.00	3.00	3.25	6.92	7.08	6.25	6.50	6.08	4.25	2.92	3.50	6.50	7.08	7.00	6.84	7.25	7.50
June 15, 2015	5.92	5.62	4.00	3.50	6.33	6.25	3.16	2.92	6.92	6.40	5.50	6.00	5.58	4.08	2.92	3.00	5.92	6.50	6.33	6.33	7.00	7.00
June 22, 2015	6.00	6.33	4.33	4.08	6.75	6.84	3.33	3.25	6.75	6.92	6.16	6.33	6.08	5.00	3.00	3.33	5.84	6.58	6.84	6.75	7.50	7.40
June 29, 2015	5.92	6.25	4.33	4.08	6.58	6.75	3.25	3.16	6.75	6.92	6.16	6.40	6.08	6.33	3.00	3.33	5.84	6.50	6.75	6.75	7.16	7.25
July 6, 2015	5.84	6.25	4.25	4.00	6.84	6.75	3.33	3.16	6.84	6.84	6.16	6.33	6.05	6.25	3.00	3.33	5.84	6.33	6.75	6.75	7.58	7.25
July 13, 2015	6.00	6.16	4.16	3.92	6.50	6.75	3.25	3.16	6.75	6.84	6.16	6.33	6.08	6.33	2.92	3.25	6.25	6.58	6.58	6.58	7.00	7.25
July 20, 2015	6.00	6.33	4.16	4.00	6.58	6.75	3.25	3.16	6.58	6.84	6.08	6.33	6.00	6.33	3.00	3.25	6.16	6.58	6.58	6.58	7.25	7.33
July 27, 2015	6.00	6.16	4.33	4.00	6.58	6.67	3.33	3.08	6.75	6.75	6.16	6.25	6.00	7.58	3.08	3.40	6.08	6.25	6.58	6.58	7.67	7.50
August 3, 2015	6.08	6.16	4.16	4.00	6.67	6.75	3.33	3.16	6.58	6.84	6.40	6.33	6.16	7.25	3.08	3.33	6.84	6.16	6.67	6.84	7.75	7.58
August 10, 2015	6.08	6.08	4.16	3.75	6.50	6.58	3.00	3.00	6.58	6.75	6.58	6.08	6.00	6.16	3.00	3.16	5.75	6.16	6.50	6.50	7.50	7.50
August 17, 2015	6.00	5.84	3.84	4.08	6.67	6.58	3.00	3.08	6.58	6.67	6.08	6.08	5.92	6.16	2.84	3.00	5.50	6.00	6.25	6.33	6.67	6.92
August 24, 2015	6.00	6.00	4.08	3.75	6.42	6.50	3.00	2.92	6.42	6.67	6.00	6.08	5.84	6.00	2.58	3.00	5.42	5.75	6.16	6.25	6.42	6.67
September 14, 2015	6.00	6.00	4.00	3.75	6.16	6.42	3.08	3.00	6.42	6.58	5.75	6.00	5.75	6.00	2.75	2.92	5.50	5.58	6.25	6.08	6.58	6.67
October 12, 2015	5.84	5.92	4.08	3.84	6.50	6.42	3.08	3.00	6.50	6.58	5.92	6.08	5.84	6.16	2.84	3.08	5.75	5.84	6.42	6.33	7.16	7.08
November 9, 2015	5.58	5.84	3.16	3.50	6.25	6.16	2.92	3.00	6.50	6.50	5.08	5.84	5.67	6.08	2.50	2.67	5.00	6.08	5.84	5.75	4.16	5.84
December 14, 2015	5.75	6.08	4.08	3.84	6.50	6.50	3.08	3.33	6.25	7.08	5.08	6.00	5.67	9.92	2.67	3.84	5.25	5.25	6.25	6.33	6.58	6.50
January 11, 2016	5.83	6.08	4.00	3.75	6.78	6.78	4.00	3.75	6.50	6.92	5.75	6.08	5.83	6.00	2.75	3.00	6.00	5.42	6.42	6.33	6.83	6.75
February 18, 2016	5.75	6.75	4.17	3.75	6.50	6.50	3.33	3.58	6.33	7.17	6.08	6.08	5.75	7.33	2.75	3.00	5.75	5.92	6.50	6.33	6.33	7.50

Fifth Bimonthly Report

Groundwater Monitoring Wells at the Luis Muñoz Marin International Airport (LMMIA)

4.0 PROJECT PROGRESS AND/OR PROPOSED SCHEDULE

The following pages provide project progress details and an updated proposed schedule for the tasks agreed upon with U.S. EPA.



Rev.: February 29, 2016

TITLE

Caribbean Airport Facilities, Inc.
LMMIA, Carolina, PR
Eleven (11) Nested Groundwater Monitoring Wells Construction with Bimonthly Sampling/Analysis Timeline

Notes:

1. During the months of April and May 2015, groundwater (GW) and soil samples were collected at each one of the nested wells as they were constructed.
2. The following 3-month period, on a weekly basis, GW levels (shallow and deep) are being logged, and monthly thereafter.
3. After the initial sampling, the nested wells are to be sampled and samples to be analyzed for TPH analysis by the designated laboratory on a bimonthly basis (every 2 months) for the first year.

M. LaReau (EPA): After sampling and water level measurements have commenced, CAF can make a recommendation based on the data to alter this schedule. At that time, EPA will review all documents presented to determine if a change is warranted.

Fifth Bimonthly Report

Groundwater Monitoring Wells at the Luis Muñoz Marin International Airport (LMMIA)

5.0 REFERENCES

1 Weather Underground. Historical Weather. [Internet]. 2015 Available from: http://www.wunderground.com/history/.

2 Center for Operational Oceanographic Products and Services. Observed Tides/Water Levels at 9755371, San Juan, PR. [Internet]. Available from: http://tidesandcurrents.noaa.gov/waterlevels.html.

DATA VALIDATION REPORT FOR THE JANUARY, 2016 DATA COLLECTION EVENTS PERFORMED AT

CAF GW Monitoring Well Construction Project
(Bimonthly Sampling)

Prepared for

Eng. Fernando Rodríguez
Fernando L. Rodríguez, P.E. & Associates

February, 2016

Prepared by

Rafael Infante
Environmental Consultant
Chemist License 1888

TABLE OF CONTENT

INTRODUCTION

The purpose of the independent data validation process for the Caribbean Airport Facility (CAF) GW well construction project is to assess the effect of the overall analytical process on the usability of the data. The validation process includes the verification and interpretation of analytical data, which provides the end user with a more complete understanding of the quality and defensibility of the laboratory data. The two major categories of data evaluation are laboratory performance and matrix interferences. Evaluation of laboratory performance is a check for compliance with the analytical methods and regulatory requirements; either the laboratory did, or did not, analyze the samples within the limits of the established analytical method. Evaluation of matrix interferences is more subtle and involves the analysis of several areas of results including surrogate spike recoveries, matrix spike recoveries, and reproducibility of duplicate sample results.

After the final analytical results were released by the laboratory, both the sample and QC data were carefully reviewed to verify sample identity, instrument calibration, detection limits, dilution factors, numerical computations, accuracy of transcriptions, and chemical interpretations. Additionally, the QC data were reviewed to ascertain whether they were within the laboratory-defined limits for accuracy and precision. Any non-conforming data were discussed in the laboratory's data package case narrative. Additional non-conforming (qualified or rejected data) form part of this report.

The sample results were assessed according to USEPA data validation guidance documents:

- USEPA Region 2, SOP HW-24, Standard Operating Procedure for the Validation of Organic Data Acquired using SW-846 Method 8260B (August, 2009-Revision 2), the USEPA National Functional Guidelines for Low/Medium Concentration Organic Data Review (SOW SOM01.2 SOP HW-33, August 2009 – Revision 2), the USEPA National Functional Guidelines for Organic Data Review for Low Concentration Water (SOP HW-13, August, 2009-Revision 3) is used as a primary guidance document. Also, QC criteria from "Test Methods for Evaluating Solid Waste, Physical/Chemical Methods SW-846 (Final Update III, December 1996)," specifically for Methods 8000/8021B are utilized. The QC criteria and data validation actions listed on the data review worksheets are from the primary guidance document, unless otherwise noted.

- Data Validation Standard Operating Procedure for Organic Analysis of Low/Medium Concentration Semivolatile Acquired using SW-846 Method 8270C (SOW SOM01.2-SOP HW-35, August 2009 –Revision 1); Validation Semivolatile Organic Compounds by SW846 8270 (SOP HW-22, August, 2009 – Revision 4). Also, the QC criteria from "Test Methods for Evaluating Solid Waste, Physical/Chemical Methods SW-846 (Final Update III, December 1996)," specifically for Methods 8000/8015C are utilized. The QC criteria and data validation actions listed on the data review worksheets are from the primary guidance document, unless otherwise noted.

Sample copies of the Data Review Worksheets utilized for the validation process are included in Appendix B. Completed data validation checklist and raw data are kept on our files. The following USEPA primary flags were used to qualify the data for this study:

- (No Code) = Confirmed Identification.
- B = Detected substantially above the level reported in laboratory or field blank.
- R = Unreliable result. Analyte may or may not be present in the sample. Supporting data necessary to confirm result.
- N = Tentative identification. Consider present. Special methods may be needed to confirm its presence or absence in future sampling events.
- J = Analyte present. Reported value may not be accurate or precise.
- K = Analyte present. Reported value may be biased high. Actual value is expected lower.
- L = Analyte present. Reported value may be biased low. Actual value is expected higher.
- UL = Not detected, quantitation limit is probably higher.
- Q = No analytical result.
- NJ = Qualitative identification questionable due to poor resolution. Presumptively present at approximate quantity.
- U = The analyte was analyzed for, but was not detected above the level of the associated value. The associated value is either the sample quantitation limit or the sample detection limit.
- R = The data are unusable. Analyte may or may not be present in the sample.
- UJ = The analyte was analyzed for, but not detected. The associated detection limit is an estimate and may be inaccurate or imprecise.
- X = Surrogate recovery outside control limits.
- H = Sample extracted or analyzed outside the method specific holding time

II. VALIDATION REPORT

This report discusses the results of data validation of analytical data provided by Eurofins-Lancaster Laboratories Environmental for samples collected at the Caribbean Airport Facility (CAF) in Carolina, Puerto Rico on January 12 and 13, 2016 reported under SDG numbers: 1623189 and 1623732. Copies of the laboratory results are included in the Appendix A. The methods employed are shown in Table 1. Table 2 summarizes the samples collected, sampling date, and analysis performed.

Table 1. Analytical Methods

ANALYSIS PERFORMED	ANALYTICAL METHOD
AQUEOUS	
TPH- GASOLINE (C6 – C10)	SW846-5030B/SW846-8015B
TPH-DIESEL (C10 – C28)	SW846-3510C/SW846-8015B

Table 2. Samples Analyzed, Sampling Date, and Analysis Performed

SAMPLE NUMBER	SAMPLE DESCRIPTION	SAMPLING DATE	ANALYSIS
8204475	MW11D-W01	01-12-16	TPH-GRO; TPH DRO
8204476	MW11S-W01	01-12-16	TPH-GRO; TPH-DRO
8204477	MW10D-W01	01-12-16	TPH-GRO; TPH-DRO
8204478	MW10S-W01	01-12-16	TPH-GRO; TPH DRO
8204479	MW6S-W01	01-12-16	TPH-GRO; TPH-DRO
8204480	FIELD BLANK GRAB WATER	01-12-16	TPH-GRO; TPH-DRO
8204481	EQUIPMENT BLANK GRAB WATER	01-12-16	TPH-GRO; TPH DRO
8204482	MW3S-W01	01-12-16	TPH-GRO; TPH-DRO
8204483	MW3S-W01MS	01-12-16	TPH-GRO; TPH-DRO
8204484	MW3S-W01MSD	01-12-16	TPH-GRO; TPH-DRO
8204485	MW9D-W01	01-12-16	TPH-GRO; TPH-DRO
8204486	MW-9S-W01	01-12-16	TPH-GRO; TPH-DRO
8204487	MW5D-W01	01-12-16	TPH-GRO; TPH DRO
8204488	MW5D-W01D	01-12-16	TPH-GRO; TPH-DRO
8204489	MW5S-W01	01-12-16	TPH-GRO; TPH-DRO
8204490	MW7D-W01	01-12-16	TPH-GRO; TPH DRO
8204491	MW7S-W01	01-12-16	TPH-GRO; TPH-DRO
8204492	MW6D-W01	01-12-16	TPH-GRO; TPH-DRO
8204493	MW6S-W01	01-12-16	TPH-GRO; TPH DRO
8204494	MW3D-W01	01-12-16	TPH-GRO; TPH DRO
8204495	TRIP BLANK WATER	12-18-15	TPH-GRO
8207313	MW4D-W01	01-13-16	TPH-GRO; TPH-DRO
8207314	MW4S-W01	01-13-16	TPH-GRO; TPH DRO
8207315	MW2D-W01	01-13-16	TPH-GRO; TPH DRO
8207316	MW2S-W01	01-13-16	TPH-GRO; TPH DRO
8207317	MW1S-W01	01-13-16	TPH-GRO; TPH-GRO
8207318	MW1D-W01	01-13-16	TPH-GRO; TPH-DRO

Table 2. Samples Analyzed, Sampling Date, and Analysis Performed

SAMPLE NUMBER	SAMPLE DESCRIPTION	SAMPLING DATE	ANALYSIS
8207319	MW8D-W01	01-13-16	TPH-GRO; TPH DRO
8207320	MW8S-W01	01-13-16	TPH-GRO; TPH-DRO
8207321	MW8S-W01 MS	01-13-16	TPH-GRO; TPH-DRO
8207322	MW8S-W01 MSD	01-13-16	TPH-GRO; TPH-DRO
8207323	EQUIPMENT BLANK COMPOSITE WATER	01-13-16	TPH-GRO; TPH-DRO
8207324	FIELD BLANK COMPOSITE WATER	01-13-16	TPH-GRO; TPH-DRO
8207325	TRIP BLANK WATER	01-13-16	TPH-GRO

The samples results were evaluated using general guidelines for data validation approved by local (PR Environmental Quality Board (EQB)) and national (Environmental Protection Agency (EPA)). General qualifiers were employed. The are no analytical and quality issues observed in the data package are shown in Table 3.

Table 3. Analytical and quality issues.

Laboratory Sample ID	Client ID	Sampling Date	Sample Type	Method	Analyte	Qualifier	Comment
160160015A	LCS	01/20/16	LCS	8015B	DRO	J	LCS – % recovery > lower laboratory control limits; results qualified as estimated (J) in samples 8204475 to 8204495. Professional judgment.
8204483	MW3S-W01MS	01/12/16	MS	8015B	DRO	J	MS/MSD outside laboratory control limits; results qualified as estimated (J) in samples 8204475 to 8204495.
8204484	MW3S-W01 MSD	01/12/16	MSD	8015B	GRO	J	
8204481	EQUIPMENT BLANK GRAB WATER	01/12/16	EB	8015B	DRO	-	DRO concentration in equipment blank 190 ug/L < 5 x SQL. No action taken for samples in the batch.
8207323	EQUIPMENT BLANK COMPOSITE WATER	01/13/16	FB	8015B	DRO	-	DRO concentration in equipment blank 190 ug/L < 5 x SQL. No action taken for samples in the batch.

Note: Laboratory results are assessed based on accuracy and precision. Accuracy is the difference between experimental value and true value. In environmental samples, true values are not known and thus accuracy is evaluated indirectly. Accuracy evaluation is performed by evaluating surrogate recoveries, analysis of matrix spike/matrix spike duplicates, and laboratory control samples. Accuracy was assessed using laboratory

control samples (LCS); matrix spike and matrix spike duplicate recovery results. Precision was assessed by evaluating results of laboratory and field duplicates.

Certification

The samples described in Table 2 were analyzed following standard procedures accepted by regulatory agencies. The quality control requirements met the methods criteria except in the occasions described in this document. The overall quality of the data is acceptable. Some of the results were qualified (J) by the laboratory and by the data validator, none of the results were rejected (R). The results are valid and can be used for decision taking purposes.

Rafael Infante
Licensed Chemist
Chemist License 1888

APPENDIX A

Analysis Report

Caribbean Airport Facility

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Analysis Report

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Sample Description: MW11D-W01 Grab Groundwater
CAF GW Monitoring Well Construction Project

LL Sample # WW 8204475
LL Group # 1623189
Account # 20530

Project Name: CAF GW Monitoring Well Construction Project (Bimonthly Sampling)

Collected: 01/12/2016 08:04 by DJP

Submitted: 01/13/2016 10:00
Reported: 01/28/2016 12:50

Caribbean Airport Facilities
Suite ?
150 Sector Central
Cardina PR 00979

MW11D

CAT No.	Analysis Name	CAS Number	Result	Method Detection Limit*	Limit of Quantitation	Dilution Factor
GC Volatiles	**SW-846 8015B**		ug/l	ug/l	ug/l	
01635	TPH-GRO water C6-C10	n.a.	N.D.	20	50	1
GC Petroleum Hydrocarbons	**SW-846 8015B**		ug/l	ug/l	ug/l	
08269	TPH-DRO water C10-C28	n.a.	66 J	31	96	1

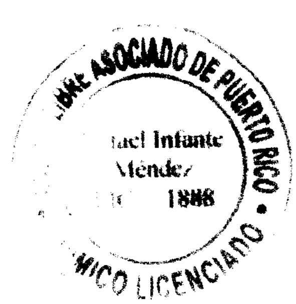
The recovery for a target analyte(s) in the Laboratory Control Spike(s) is outside the QC acceptance limits as noted on the QC Summary. The following corrective action was taken:
The sample was re-extracted outside the method required holding time and the QC is compliant. All results are reported from the first trial. Similar results were obtained in both trials.

General Sample Comments

All QC is compliant unless otherwise noted. Please refer to the Quality Control Summary for overall QC performance data and associated samples.

Laboratory Sample Analysis Record

CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Time	Analyst	Dilution Factor
01635	TPH-GRO water C6-C10	SW-846 8015B	1	16019B20A	01/19/2016 02:46	Marie D Beamenderfer	1
01146	GC VOA Water Prep	SW-846 5030B	1	16019B20A	01/19/2016 02:46	Marie D Beamenderfer	1
08269	TPH-DRO water C10-C28	SW-846 8015B	1	160180015A	01/20/2016 17:50	Christine E Dolman	1
07003	Extraction - DRO (Waters)	SW-846 3510C	1	160180015A	01/18/2016 09:30	Bradley K VanGorder	1



* This limit was used in the evaluation of the final result

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Analysis Report

Sample Description: MW11S-W01 Grab Groundwater
CAF GW Monitoring Well Construction Project

LL Sample # WW 8204476
LL Group # 1623189
Account # 20530

Project Name: CAF GW Monitoring Well Construction Project (Bimonthly Sampling)

Collected: 01/12/2016 08:13 by DJP

Submitted: 01/13/2016 10:00
Reported: 01/28/2016 12:50

Caribbean Airport Facilities
Suite 7
150 Sector Central
Cardina PR 00979

MW11S

CAT No.	Analysis Name	CAS Number	Result	Method Detection Limit*	Limit of Quantitation	Dilution Factor
GC Volatiles	**SW-846 8015B**		ug/l	ug/l	ug/l	
01635	TPH-GRO water C6-C10	n.a.	N.D.	20	50	1
GC Petroleum Hydrocarbons	**SW-846 8015B**		ug/l	ug/l	ug/l	
08269	TPH-DRO water C10-C28	n.a.	610 J	21	96	1

The recovery for a target analyte(s) in the Laboratory Control Spike(s) is outside the QC acceptance limits as noted on the QC Summary. Sufficient sample was not available to repeat the analysis.

General Sample Comments

All QC is compliant unless otherwise noted. Please refer to the Quality Control Summary for overall QC performance data and associated samples.

Laboratory Sample Analysis Record

CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Time	Analyst	Dilution Factor
01635	TPH-GRO water C6-C10	SW-846 8015B	1	16017B00A	01/22/2016 03:19	Maria D Bou Cabrera	1
01146	GC VOA Water Prep	SW-846 5030B	1	16017B20A	01/18/2016 03:13	Maria D Bearenderfer	1
08269	TPH-DRO water C10-C28	SW-846 8015B	1	16018A00A	01/21/2016 07:20	Christian E Delman	1
07003	Extraction - DRO (Waters)	SW-846 3510C	1	16018A00A	01/18/2016 08:30	Brasler A Vanleuven	1

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Analysis Report

LL Sample # WW 8204477
LL Group # 1623189
Account # 20530

Sample Description: MW10D-W01 Grab Groundwater
CAF GW Monitoring Well Construction Project

Project Name: CAF GW Monitoring Well Construction Project (Bimonthly Sampling)

Collected: 01/12/2016 08:50 by DJP

Submitted: 01/13/2016 10:00
Reported: 01/28/2016 12:50

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Cardima PR 00979

MW10D

CAT No.	Analysis Name	CAS Number	Result	Method Detection Limit*	Limit of Quantitation	Dilution Factor
	GC Volatiles	SW-846 8015B	ug/l	ug/l	ug/l	
01636	TPH-GRO Water C6-C10	N.A.	N.D.	20	50	1
	GC Petroleum Hydrocarbons	SW-846 8015B	ug/l	ug/l	ug/l	
08268	TPH-DRO Water C10-C28	N.A.	66 J 0	31	96	1

The recovery for a target analyte(s) in the Laboratory Control Spike(s) is outside the QC acceptance limits as noted on the QC Summary. The following corrective action was taken. The sample was re-extracted outside the method required holding time and the QC is compliant. All results are reported from the first trial. Similar results were obtained in both trials.

General Sample Comments

All QC is compliant unless otherwise noted. Please refer to the Quality Control Summary for overall QC performance data and associated samples.

Laboratory Sample Analysis Record

CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Time	Analyst	Dilution Factor
01636	TPH-GRO Water C6-C10	SW-846 8015B	1	16019B20A	01/19/2016 05:41	Marie D Beamenderfer	1
01146	GC VOA Water Prep	SW-846 5030B	1	16019B20A	01/19/2016 05:41	Marie D Beamenderfer	1
08268	TPH-DRO Water C10-C28	SW-846 8015B	1	16019009SA	01/25/2016 19:12	Christine E Delman	1
07003	Extraction - DRO (Waters)	SW-846 3510C	1	16019009SA	01/19/2016 08:30	Bradley A VanDeuver	1

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LL Sample # WW 8204478
LL Group # 1623189
Account # 20530

Sample Description: MW10S-W01 Grab Groundwater
CAF GW Monitoring Well Construction Project

Project Name: CAF GW Monitoring Well Construction Project (Bimonthly Sampling)

Collected: 01/12/2016 08:57 by DJP

Submitted: 01/13/2016 10:00
Reported: 01/28/2016 12:50

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Suite 7
150 Sector Central
Cardina PR 00979

MW10S

CAT No.	Analysis Name	CAS Number	Result		Method Detection Limit*	Limit of Quantitation	Dilution Factor
GC Volatiles	**SW-846 8015B**		ug/l		ug/l	ug/l	
01635	TPH-GRO water C6-C10	N.A.	N.D		20		1
GC Petroleum Hydrocarbons	**SW-846 8015B**		ug/l		ug/l	ug/l	
08269	TPH-DRO water C10-C28	n.a.	57	J	31	95	1

The recovery for a target analyte(s) in the Laboratory Control Spike(s) is outside the QC acceptance limits as noted on the QC Summary. The following corrective action was taken: The sample was re-extracted outside the method required holding time and the QC is compliant. All results are reported from the first trial. Similar results were obtained in both trials.

General Sample Comments

All QC is compliant unless otherwise noted. Please refer to the Quality Control Summary for overall QC performance data and associated samples.

Laboratory Sample Analysis Record

CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Time	Analyst	Dilution Factor
01635	TPH-GRO water C6-C10	SW-846 8015B	1	16012B20A	01/[illegible]/2016 04:08	Marie D Bernendezfer	1
01146	GC VOA Water Prep	SW-846 5030B	1	16012B20A	01/[illegible]/2016 04:08	Marie D Bernendezfer	1
08269	TPH-DRO water C10-C28	SW-846 8015B	-	16016015A	01/21/2016 22:52	Christine E Dolman	1
07003	Extraction - DRO (Waters)	SW-846 3511	1	16016015A	01/[illegible]/2016 07:30	Bradley M Yentzer	1

* = This limit was used in the evaluation of the final result

LL Sample # WW 8204479
LL Group # 1623189
Account # 20530

Sample Description: MW6S-W01 Grab Groundwater
CAF GW Monitoring Well Construction Project

Project Name: CAF GW Monitoring Well Construction Project (Bimonthly Sampling)

Collected: 01/12/2016 09:30 by DJP

Submitted: 01/13/2016 10:00
Reported: 01/28/2016 12:50

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Cardina PR 00979

MW6S-

CAT No.	Analysis Name	CAS Number	Result		Method Detection Limit*	Limit of Quantitation	Dilution Factor
	GC Volatiles	SW-846 8015B	ug/l		ug/l	ug/l	
01635	TPH-GRO water C6-C10	N.A.	N.D.		20	50	1
	GC Petroleum Hydrocarbons	SW-846 8015B	ug/l		ug/l	ug/l	
08269	TPH-DRO water C10-C28	N.A	120	J	21	96	1

The recovery for a target analyte(s) in the Laboratory Control Spike(s) is outside the QC acceptance limits as noted on the QC Summary. The following corrective action was taken: The sample was re-extracted outside the method required holding time and the QC is compliant. All results are reported from the first trial. Similar results were obtained in both trials.

General Sample Comments

All QC is compliant unless otherwise noted. Please refer to the Quality Control Summary for overall QC performance data and associated samples.

Laboratory Sample Analysis Record

CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Time	Analyst	Dilution Factor
01635	TPH-GRO water C6-C10	SW-846 8015B	1	16017B20A	01/15/2016 08:03	Marie D Bearrendeifer	1
01146	GC VOA Water Prep	SW-846 5030B	1	16017B20A	01/15/2016 08:03	Marie D Bearrendeifer	1
08269	TPH-DRO water C10-C28	SW-846 8015B	1	16016A015A	01/21/2016 23:13	Christine E Dolman	1
07003	Extraction - DRO (Waters)	SW-846 3510C	1	16016A015A	01/21/2016 07:30	Brittany M VanEnwyk	1

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Analysis Report

LL Sample # WW 8204480
LL Group # 1623189
Account # 20530

Sample Description: Field Blank Grab Water
CAF GW Monitoring Well Construction Project

Project Name: CAF GW Monitoring Well Construction Project (Bimonthly Sampling)

Collected: 01/12/2016 07:37 by DJP
through 01/12/2016 14:10
Submitted: 01/13/2016 10:00
Reported: 01/28/2016 12:50

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Suite 7
150 Sector Central
Cardina PR 00979

MW6SF

CAT No.	Analysis Name	CAS Number	Result	Method Detection Limit*	Limit of Quantitation	Dilution Factor
			ug/l	ug/l	ug/l	
GC Volatiles	**SW-846 8015B**					
01633	TPH-GRO water C6-C10	N.A.	N.D.	20	50	1
			ug/l	ug/l	ug/l	
GC Petroleum Hydrocarbons	**SW-846 8015B**					
08269	TPH-DRO water C10-C28	N.A.	N.D. J	30	95	1

The recovery for a target analyte(s) in the Laboratory Control Spike(s) is outside the QC acceptance limits as noted on the QC Summary. The following corrective action was taken: The sample was re-extracted outside the method required holding time and the QC is compliant. All results are reported from the first trial. Similar results were obtained in both trials.

General Sample Comments

All QC is compliant unless otherwise noted. Please refer to the Quality Control Summary for overall QC performance data and associated samples.

Laboratory Sample Analysis Record

CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Time	Analyst	Dilution Factor
01633	TPH-GRO water C6-C10	SW-846 8015B	1	16011B20A	01/18/2016 23:33	Marie D Beahendeifer	1
01146	GC VOA Water Prep	SW-846 5030B	1	16011B20A	01/18/2016 23:33	Marie D Beahendeifer	1
08269	TPH-DRO water C10-C28	SW-846 8015B	1	16016B015A	01/20/2016 18:33	Christine E Dalman	1
07003	Extraction - DRO (Waters)	SW-846 3510C	1	16016B015A	01/19/2016 08:30	Brandon S Shellenberger	1

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Analysis Report

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Sample Description: Equipment Blank Grab Water
CAF GW Monitoring Well Construction Project

LL Sample # WW 8204481
LL Group # 1623189
Account # 20530

Project Name: CAF GW Monitoring Well Construction Project (Bimonthly Sampling)

Collected: 01/12/2016 07:47 by DJP

Submitted: 01/13/2016 10:00
Reported: 01/28/2016 12:50

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150 Sector Central
Cardina PR 00979

MW6SE

CAT No.	Analysis Name	CAS Number	Result	Method Detection Limit*	Limit of Quantitation	Dilution Factor
GC Volatiles	**SW-846 8015B**		ug/l	ug/l	ug/l	
01635	TPH-GRO water C6-C10	n.a.	N D	20	50	1
GC Petroleum Hydrocarbons	**SW-846 8015B**		ug/l	ug/l	ug/l	
08269	TPH-DRO water C10-C28	n.a.	190 J	30	95	1

The recovery for a target analyte(s) in the Laboratory Control Spike(s) is outside the QC acceptance limits as noted on the QC Summary. The following corrective action was taken: The sample was re-extracted outside the method required holding time and the QC is compliant. All results are reported from the first trial. Similar results were obtained in both trials.

General Sample Comments

All QC is compliant unless otherwise noted. Please refer to the Quality Control Summary for overall QC performance data and associated samples.

Laboratory Sample Analysis Record

CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Time	Analyst	Dilution Factor
01635	TPH-GRO water C6-C10	SW-846 8015B	1	16011B20A	01/19/2016 02:01	Marie D Beamenderfer	1
01146	GC VOA Water Prep	SW-846 5030B	1	16011B20A	01/19/2016 02:01	Marie D Beamenderfer	1
08269	TPH-DRO water C10-C28	SW-846 8015B	1	16012B015A	01/20/2016 23:58	Christine E Colman	1
07003	Extraction - DRO (Waters)	SW-846 3510C	1	16012B015A	01/19/2016 09:30	Bradley W Van Aman	1

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Analysis Report

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Sample Description: MW3S-W01 Grab Groundwater
CAF GW Monitoring Well Construction Project

LL Sample # WW 8204482
LL Group # 1623189
Account # 20530

Project Name: CAF GW Monitoring Well Construction Project (Bimonthly Sampling)

Collected: 01/12/2016 10:20 by DJP

Submitted: 01/13/2016 10:00
Reported: 01/28/2016 12:50

Caribbean Airport Facilities
Suite 7
150 Sector Central
Cardina PR 00979

MW3S-

CAT No.	Analysis Name		CAS Number	Result	Method Detection Limit*	Limit of Quantitation	Dilution Factor
	GC Volatiles	**SW-846 8015B**		ug/l	ug/l	ug/l	
01635	TPH-GRO water C6-C10		n.a.	N.D.	20	50	1
	GC Petroleum Hydrocarbons	**SW-846 8015B**		ug/l	ug/l	ug/l	
08269	TPH-DRO water C10-C28		n.a.	72 J	30	94	1

The recovery for a target analyte(s) in the Laboratory Control Spike(s) is outside the QC acceptance limits as noted on the QC Summary. The following corrective action was taken. The sample was re-extracted outside the method required holding time and the QC is compliant. All results are reported from the first trial. Similar results were obtained in both trials.

General Sample Comments

All QC is compliant unless otherwise noted. Please refer to the Quality Control Summary for overall QC performance data and associated samples.

Laboratory Sample Analysis Record

CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Time	Analyst	Dilution Factor
01635	TPH-GRO water C6-C10	SW-846 8015B	1	16019B20A	01/19/2016 07:54	Marie D Beamenderfer	1
01146	GC VOA Water Prep	SW-846 5030B	1	16019B20A	01/19/2016 07:54	Marie D Beamenderfer	1
08269	TPH-DRO water C10-C28	SW-846 8015B	1	160160015A	01/21/2016 18:55	Christine E Dolman	1
07003	Extraction - DRO (Waters)	SW-846 3510C	1	160160015A	01/18/2016 07:30	Blaine A Wenger	1

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Analysis Report

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Sample Description: MW3S-W01MS Grab Groundwater
CAF GW Monitoring Well Construction Project

LL Sample # WW 8204483
LL Group # 1623189
Account # 20530

Project Name: CAF GW Monitoring Well Construction Project (Bimonthly Sampling)

Collected: 01/12/2016 10:22 by DJP
Submitted: 01/13/2016 10:00
Reported: 01/28/2016 12:50

Caribbean Airport Facilities
Suite [illegible]
150 Sector Central
Cardina PR 00979

MW3S-

CAT No.	Analysis Name	CAS Number	Result	Method Detection Limit*	Limit of Quantitation	Dilution Factor
GC Volatiles	**SW-846 8015B**		ug/l	ug/l	ug/l	
01635	TPH-GRO water C6-C10	n.a.	1,200	20	50	1
GC Petroleum Hydrocarbons	**SW-846 8015B**		ug/l	ug/l	ug/l	
08269	TPH-DRO water C10-C28	n.a.	1,200 J	31	90	1

The recovery for a target analyte(s) in the Laboratory Control Spike(s) is outside the QC acceptance limits as noted on the QC Summary. The following corrective action was taken. The sample was re-extracted outside the method required holding time and the QC is compliant. All results are reported from the first trial. Similar results were obtained in both trials.

General Sample Comments

All QC is compliant unless otherwise noted. Please refer to the Quality Control Summary for overall QC performance data and associated samples.

Laboratory Sample Analysis Record

CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Time	Analyst	Dilution Factor
01635	TPH-GRO water C6-C10	SW-846 8015B	1	16019B20A	01/19/2016 [illegible]	Marie D Beamenderfer	1
01146	GC VOA Water Prep	SW-846 5030B	1	16019B20A	01/19/2016 [illegible]	Marie D Beamenderfer	1
08269	TPH-DRO water C10-C28	SW-846 8015B	1	160160015A	[illegible]/2016 19:14	Christine E Dolman	1
07003	Extraction - DRO (Waters)	SW-846 3510C	1	160160015A	[illegible]	[illegible]	1

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Joel Infante Méndez
1888

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Sample Description: MW3S-W01MSD Grab Groundwater
CAF GW Monitoring Well Construction Project

LL Sample # WW 8204484
LL Group # 1623189
Account # 20530

Project Name: CAF GW Monitoring Well Construction Project (Bimonthly Sampling)

Collected: 01/12/2016 10:24 by DJP

Submitted: 01/13/2016 10:00
Reported: 01/28/2016 12:50

Caribbean Airport Facilities
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150 Sector Central
Cardina PR 00979

MW3S-

CAT No.	Analysis Name	CAS Number	Result	Method Detection Limit*	Limit of Quantitation	Dilution Factor
GC Volatiles	**SW-846 8015B**		ug/l	ug/l	ug/l	
01635	TPH-GRO Water C6-C10	n.a.	1,250	20	50	1
GC Petroleum Hydrocarbons	**SW-846 8015B**		ug/l	ug/l	ug/l	
08269	TPH-DRO Water C10-C28	n.a.	1,400 J	31	97	1

The recovery for a target analyte(s) in the Laboratory Control Spike(s) is outside the QC acceptance limits as noted on the QC Summary. The following corrective action was taken: The sample was re-extracted outside the method required holding time and the QC is compliant. All results are reported from the first trial. Similar results were obtained in both trials.

General Sample Comments

All QC is compliant unless otherwise noted. Please refer to the Quality Control Summary for overall QC performance data and associated samples.

Laboratory Sample Analysis Record

CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Time	Analyst	Dilution Factor
01635	TPH-GRO Water C6-C10	SW-846 8015B	1	16011B20A	01/18/2016 [illegible]	Mary D Beamendelfer	1
01146	GC VOA Water Prep	SW-846 5030B	1	16011B20A	01/18/2016 [illegible]	Mary D Beamendelfer	1
08269	TPH-DRO Water C10-C28	SW-846 8015B	1	16016A015A	01/20/2016 13:32	Christine E Dolman	1
07003	Extraction - DRO (Waters)	SW-846 3510C	1	16016A015A	01/19/2016 [illegible]	Brittany D Hamilton	1

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Analysis Report

Sample Description: MW9D-W01 Grab Groundwater
CAF GW Monitoring Well Construction Project

LL Sample # WW 8204485
LL Group # 1623189
Account # 20530

Project Name: CAF GW Monitoring Well Construction Project (Bimonthly Sampling)

Collected: 01/12/2016 12:28 by DJP

Submitted: 01/13/2016 10:00
Reported: 01/28/2016 12:50

Caribbean Airport Facilities
Suite 3
150 Sector Central
Cardina PR 00979

MW9D-

CAT No.	Analysis Name	CAS Number	Result	Method Detection Limit*	Limit of Quantitation	Dilution Factor
GC Volatiles	**SW-846 8015B**		ug/l	ug/l	ug/l	
01635	TPH-GRO Water C6-C10	n.a.	N.D.	20	50	1
GC Petroleum Hydrocarbons	**SW-846 8015B**		ug/l	ug/l	ug/l	
08269	TPH-DRO water C10-C28	n.a.	490 J	31	96	1

The recovery for a target analyte(s) in the Laboratory Control Spike(s) is outside the QC acceptance limits as noted on the QC Summary. The following corrective action was taken: The sample was re-extracted outside the method required holding time and the QC is compliant. All results are reported from the first trial. Similar results were obtained in both trials.

General Sample Comments

All QC is compliant unless otherwise noted. Please refer to the Quality Control Summary for overall QC performance data and associated samples.

Laboratory Sample Analysis Record

CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Time	Analyst	Dilution Factor
01635	TPH-GRO Water C6-C10	SW-846 8015B	1	1601 B20A	01/18/2016 05:31	Marie F Bearendorfer	1
01146	GC VOA Water Prep	SW-846 5030B	1	1601 B20A	01/18/2016 05:31	Marie F Bearendorfer	1
08269	TPH-DRO water C10-C28	SW-846 8015B	1	1601-0015A	01/21/2016 23:54	Christine E Dolman	1
07003	Extraction - DRO (Waters)	SW-846 3510C	1	1601A0015A	01/20/2016 09:30	Brandon M Spangler	1

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Analysis Report

LL Sample # WW 8204486
LL Group # 1623189
Account # 20530

Sample Description: MW9S-W01 Grab Groundwater
CAF GW Monitoring Well Construction Project

Project Name: CAF GW Monitoring Well Construction Project (Bimonthly Sampling)

Collected: 01/12/2016 12:35 by DJP

Submitted: 01/13/2016 10:00
Reported: 01/28/2016 12:50

Caribbean Airport Facilities
Suite 1
150 Sector Central
Cardina PR 00979

MW9S-

CAT No.	Analysis Name	CAS Number	Result	Method Detection Limit*	Limit of Quantitation	Dilution Factor
GC Volatiles	**SW-846 8015B**		ug/l	ug/l	ug/l	
01635	TPH-GRO water C6-C10	n.a.	N.D.	20	50	1
GC Petroleum Hydrocarbons	**SW-846 8015B**		ug/l	ug/l	ug/l	
08269	TPH-DRO water C10-C28	n.a.	860 J	30	94	1

The recovery for a target analyte(s) in the Laboratory Control Spike(s) is outside the QC acceptance limits as noted on the QC Summary. Sufficient sample was not available to repeat the analysis.

General Sample Comments

All QC is compliant unless otherwise noted. Please refer to the Quality Control Summary for overall QC performance data and associated samples.

Laboratory Sample Analysis Record

CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Time	Analyst	Dilution Factor
01635	TPH-GRO water C6-C10	SW-846 8015B	1	16017B20A	01/19/2016 05:58	Mark D Bearendorfer	1
01146	GC VOA Water Prep	SW-846 5030B	1	16017B20A	01/19/2016 05:58	Mark D Bearendorfer	1
08269	TPH-DRO water C10-C28	SW-846 8015B	1	16018A01SA	01/27/2016 01:00	Christine E Dolman	1
07003	Extraction - DRO (Waters)	SW-846 3510C	1	16018A01SA	01/18/2016 08:30	Bradley M VanLeuven	1

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Analysis Report

Sample Description: MW5D-W01 Grab Groundwater
CAF GW Monitoring Well Construction Project

LL Sample # WW 8204487
LL Group # 1623189
Account # 20530

Project Name: CAF GW Monitoring Well Construction Project (Bimonthly Sampling)

Collected: 01/12/2016 13:10 by DJP

Submitted: 01/13/2016 10:00
Reported: 01/28/2016 12:50

Caribbean Airport Facilities
Suite 3
150 Sector Central
Cardina PR 00979

MW5D-

CAT No.	Analysis Name	CAS Number	Result	Method Detection Limit*	Limit of Quantitation	Dilution Factor
GC Volatiles	**SW-846 8015B**		ug/l	ug/l	ug/l	
01635	TPH-GRO Water C6-C10	n.a.	N.D.	20	50	1
GC Petroleum Hydrocarbons	**SW-846 8015B**		ug/l	ug/l	ug/l	
08269	TPH-DRO Water C10-C28	n.a.	190 J	30	94	1

The recovery for a target analyte(s) in the Laboratory Control Spike(s) is outside the QC acceptance limits as noted on the QC Summary. The following corrective action was taken: The sample was re-extracted outside the method required holding time and the QC is compliant. All results are reported from the first trial. Similar results were obtained in both trials.

General Sample Comments

All QC is compliant unless otherwise noted. Please refer to the Quality Control Summary for overall QC performance data and associated samples.

Laboratory Sample Analysis Record

CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Time	Analyst	Dilution Factor
01635	TPH-GRO Water C6-C10	SW-846 8015B	1	1601B20A	01/28/2016 04:06	Mark D Beaverdeifer	1
01146	GC VOA Water Prep	SW-846 5030B	1	1601B20A	01/28/2016 04:06	Mark D Beaverdeifer	1
08269	TPH-DRO Water C10-C28	SW-846 8015B	1	1601A0015A	01/22/2016 19:58	Christine E Dolman	1
07003	Extraction - DRO (Waters)	SW-846 3510C	1	1601A0015A	01/20/2016 09:00	Brandy M VanSomer	1

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Analysis Report

Sample Description: MW5D-W01D Grab Groundwater
CAF GW Monitoring Well Construction Project

LL Sample # WW 8204488
LL Group # 1623189
Account # 20530

Project Name: CAF GW Monitoring Well Construction Project (Bimonthly Sampling)

Collected: 01/12/2016 13:12 by DJP

Submitted: 01/13/2016 10:00
Reported: 01/28/2016 12:50

Caribbean Airport Facilities
Suite 3
150 Sector Central
Cardina PR 00979

MW5DD

CAT No.	Analysis Name	CAS Number	Result	Method Detection Limit*	Limit of Quantitation	Dilution Factor
GC Volatiles	**SW-846 8015B**		ug/l	ug/l	ug/l	
01635	TPH-GRO water C6-C10	n.a.	N.D.	20	50	1
GC Petroleum Hydrocarbons	**SW-846 8015B**		ug/l	ug/l	ug/l	
08269	TPH-DRO water C10-C28	n.a.	170 J	31	96	1

The recovery for a target analyte(s) in the Laboratory Control Spike(s) is outside the QC acceptance limits as noted on the QC Summary. The following corrective action was taken: The sample was re-extracted outside the method required holding time and the QC is compliant. All results are reported from the first trial. Similar results were obtained in both trials.

General Sample Comments

All QC is compliant unless otherwise noted. Please refer to the Quality Control Summary for overall QC performance data and associated samples.

Laboratory Sample Analysis Record

CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Time	Analyst	Dilution Factor
01635	TPH-GRO water C6-C10	SW-846 8015B	1	1601GB20A	01/14/2016 04:54	Marie D Beamenderfer	1
01146	GC VOA Water Prep	SW-846 5030B	1	1601GB20A	01/14/2016 04:54	Marie D Beamenderfer	1
08269	TPH-DRO water C10-C28	SW-846 8015B	1	1601G015A	01/21/2016 21:21	Christine E Dolman	1
07003	Extraction - DRO (Waters)	SW-846 3510C	1	1601G015A	01/19/2016 08:30	Mallory M Hoffmaster	1

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Analysis Report

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Sample Description: MW5S-W01 Grab Groundwater
CAF GW Monitoring Well Construction Project

LL Sample # WW 8204489
LL Group # 1623189
Account # 20530

Project Name: CAF GW Monitoring Well Construction Project (Bimonthly Sampling)

Collected: 01/12/2016 13:19 by DJP

Submitted: 01/13/2016 10:00
Reported: 01/28/2016 12:50

Caribbean Airport Facilities
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150 Sector Central
Cardinz PR 00979

MW5S-

CAT No.	Analysis Name	CAS Number	Result	Method Detection Limit*	Limit of Quantitation	Dilution Factor
GC Volatiles	**SW-846 8015B**		ug/l	ug/l	ug/l	
01635	TPH-GRO water C6-C10	n.a.	N.D.	20	50	1
GC Petroleum Hydrocarbons	**SW-846 8015B**		ug/l	ug/l	ug/l	
08269	TPH-DRO water C10-C28	n.a.	150 J	31	96	1

The recovery for a target analyte(s) in the Laboratory Control Spike(s) is outside the QC acceptance limits as noted on the QC Summary. The following corrective action was taken. The sample was re-extracted outside the method required holding time and the QC is compliant. All results are reported from the first trial. Similar results were obtained in both trials.

General Sample Comments

All QC is compliant unless otherwise noted. Please refer to the Quality Control Summary for overall QC performance data and associated samples.

Laboratory Sample Analysis Record

CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Time	Analyst	Dilution Factor
01635	TPH-GRO water C6-C10	SW-846 8015B	1	1601 B20A	01/1[illegible]/2016 0[illegible]	Marie D Beamenderfer	1
01146	GC VOA Water Prep	SW-846 5030B	1	1601 B20A	01/1[illegible]/2016 0[illegible]	Marie D Beamenderfer	1
08269	TPH-DRO water C10-C28	SW-846 8015B	1	160140015A	01/2[illegible]/2016 20:40	Christina E Dolman	1
07003	Extraction - DRO (Waters)	SW-846 3510C	1	160140015A	01/1[illegible]/2016 [illegible]	[illegible] Van[illegible]	1

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Analysis Report

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Sample Description: MW7D-W01 Grab Groundwater
CAF GW Monitoring Well Construction Project

LL Sample # WW 8204490
LL Group # 1623189
Account # 20530

Project Name: CAF GW Monitoring Well Construction Project (Bimonthly Sampling)

Collected: 01/12/2016 13:58 by DJP

Submitted: 01/13/2016 10:00
Reported: 01/28/2016 12:50

Caribbean Airport Facilities
Suite 7
150 Sector Central
Cardina PR 00979

MW7D-

CAT No.	Analysis Name	CAS Number	Result		Method Detection Limit*	Limit of Quantitation	Dilution Factor
GC Volatiles	**SW-846 8015B**		ug/l		ug/l	ug/l	
01635	TPH-GRO water C6-C10	n.a.	50	J	20	50	1
GC Petroleum Hydrocarbons	**SW-846 8015B**		ug/l		ug/l	ug/l	
08269	TPH-DRO water C10-C28	n.a.	1,050	J	31	97	1

The recovery for a target analyte(s) in the Laboratory Control Spike(s) is outside the QC acceptance limits as noted on the QC Summary. The following corrective action was taken: The sample was re-extracted outside the method required holding time and the QC is compliant. All results are reported from the first trial. Similar results were obtained in both trials.

General Sample Comments

All QC is compliant unless otherwise noted. Please refer to the Quality Control Summary for overall QC performance data and associated samples.

Laboratory Sample Analysis Record

CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Time	Analyst	Dilution Factor
01635	TPH-GRO water C6-C10	SW-846 8015B	1	1601/B20A	01/18/2016 07:44	Maria D Bearenderfer	1
01146	GC VOA Water Prep	SW-846 5030B	1	1601/B20A	01/18/2016 07:44	Maria D Bearenderfer	1
08269	TPH-DRO water C10-C28	SW-846 8015B	1	1601600015A	01/21/2016 00:39	Christine R Dolman	1
07003	Extraction - DRO (Waters)	SW-846 3510C	1	1601600015A	01/19/2016 07:41	Brittany M Vanderveer	1

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Sample Description: MW7S-W01 Grab Groundwater
CAF GW Monitoring Well Construction Project

LL Sample # WW 8204491
LL Group # 1623189
Account # 20530

Project Name: CAF GW Monitoring Well Construction Project (Bimonthly Sampling)

Collected: 01/12/2016 14:05 by DJP

Submitted: 01/13/2016 10:00
Reported: 01/28/2016 12:50

Caribbean Airport Facilities
Suite 7
150 Sector Central
Cardina PR 00979

MW7S-

CAT No.	Analysis Name	CAS Number	Result	Method Detection Limit*	Limit of Quantitation	Dilution Factor
GC Volatiles	**SW-846 8015B**		ug/l	ug/l	ug/l	
01635	TPH-GRO water C6-C10	n.a.	N.D.	20	50	1
GC Petroleum Hydrocarbons	**SW-846 8015B**		ug/l	ug/l	ug/l	
08269	TPH-DRO water C10-C28	n.a.	180 J	30	94	1

The recovery for a target analyte(s) in the Laboratory Control Spike(s) is outside the QC acceptance limits as noted on the QC Summary. The following corrective action was taken.
The sample was re-extracted outside the method required holding time and the QC is compliant. All results are reported from the first trial. Similar results were obtained in both trials.

General Sample Comments

All QC is compliant unless otherwise noted. Please refer to the Quality Control Summary for overall QC performance data and associated samples.

Laboratory Sample Analysis Record

CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Time	Analyst	Dilution Factor
01635	TPH-GRO water C6-C10	SW-846 8015B	1	1601B20A	01/19/2016 08:14	Mary E Beaverdeifer	1
01146	GC VOA Water Prep	SW-846 5030B	1	1601B20A	01/19/2016 08:14	Mary E Beaverdeifer	1
08269	TPH-DRO water C10-C28	SW-846 8015B	1	1601600015A	01/21/2016 01:17	Christine E Dolman	1
07003	Extraction - DRO (Waters)	SW-846 3510C	1	1601600015A	01/19/2016 09:56	[illegible] Vanhuyse	1

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Analysis Report

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Sample Description: MW6D-W01 Grab Groundwater
CAF GW Monitoring Well Construction Project

LL Sample # WW 8204492
LL Group # 1623189
Account # 20530

Project Name: CAF GW Monitoring Well Construction Project (Bimonthly Sampling)

Collected: 01/12/2016 09:30 by DJP
Submitted: 01/13/2016 10:00
Reported: 01/28/2016 12:50

Caribbean Airport Facilities
Suite [illegible]
150 Sector Central
Cardina PR 00979

MW6D-

CAT No.	Analysis Name	CAS Number	Result	Method Detection Limit*	Limit of Quantitation	Dilution Factor
GC Volatiles	**SW-846 8015B**		ug/l	ug/l	ug/l	
01635	TPH-GRO water C6-C10	n.a.	N.D.	20	50	1
GC Petroleum Hydrocarbons	**SW-846 8015B**		ug/l	ug/l	ug/l	
08269	TPH-DRO water C10-C28	n.a.	140 J	31	95	1

The recovery for a target analyte(s) in the Laboratory Control Spike(s) is outside the QC acceptance limits as noted on the QC Summary. The following corrective action was taken: The sample was re-extracted outside the method required holding time and the QC is compliant. All results are reported from the first trial. Similar results were obtained in both trials.

General Sample Comments

All QC is compliant unless otherwise noted. Please refer to the Quality Control Summary for overall QC performance data and associated samples.

Laboratory Sample Analysis Record

CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Time	Analyst	Dilution Factor
01635	TPH-GRO water C6-C10	SW-846 8015B	1	16019B20A	01/19/2016 08:43	Marie D Beamenderfer	1
01146	GC VOA Water Prep	SW-846 5030B	1	16019B20A	01/19/2016 08:43	Marie D Beamenderfer	1
08269	TPH-DRO water C10-C28	SW-846 8015B	1	160180015A	01/20/2016 21:04	Christine E Dolman	1
07003	Extraction - DRO (Waters)	SW-846 3510C	1	160180015A	01/18/2016 07:54	[illegible] Vanleuven	1

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Sample Description: MW6S-W01D Grab Groundwater
CAF GW Monitoring Well Construction Project

LL Sample # WW 8204493
LL Group # 1623189
Account # 20530

Project Name: CAF GW Monitoring Well Construction Project (Bimonthly Sampling)

Collected: 01/12/2016 09:42 by DJP

Submitted: 01/13/2016 10:00
Reported: 01/28/2016 12:50

Caribbean Airport Facilities
Suite 3
150 Sector Central
Cardins PR 00979

MW6SD

CAT No.	Analysis Name	CAS Number	Result	Method Detection Limit*	Limit of Quantitation	Dilution Factor
GC Volatiles	**SW-846 8015B**		ug/l	ug/l	ug/l	
01636	TPH-GRO Water C6-C10	n.a.	N.D.	20	50	1
GC Petroleum Hydrocarbons	**SW-846 8015B**		ug/l	ug/l	ug/l	
08269	TPH-DRO Water C10-C28	n.a.	51 J	31	95	1

The recovery for a target analyte(s) in the Laboratory Control Spike(s) is outside the QC acceptance limits as noted on the QC Summary. The following corrective action was taken. The sample was re-extracted outside the method required holding time and the QC is compliant. All results are reported from the first trial. Similar results were obtained in both trials.

General Sample Comments

All QC is compliant unless otherwise noted. Please refer to the Quality Control Summary for overall QC performance data and associated samples.

Laboratory Sample Analysis Record

CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Time	Analyst	Dilution Factor
01636	TPH-GRO Water C6-C10	SW-846 8015B	1	16018A20A	01/18/2016 18:28	Jeremy C Giffin	1
01146	GC VOA Water Prep	SW-846 5030B	1	16018A20A	01/18/2016 18:28	Jeremy C Giffin	1
08269	TPH-DRO Water C10-C28	SW-846 8015B	1	16016A015A	01/20/2016 22:28	Christine E Dolman	1
07003	Extraction - DRO (Waters)	SW-846 3510C	1	16016A015A	01/19/2016 09:30	Bradley M VanLeuven	1

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Sample Description: MW3D-W01 Grab Groundwater
CAF GW Monitoring Well Construction Project

LL Sample # WW 8204494
LL Group # 1623189
Account # 20530

Project Name: CAF GW Monitoring Well Construction Project (Bimonthly Sampling)

Collected: 01/12/2016 10:12 by DJP

Submitted: 01/13/2016 10:00
Reported: 01/28/2016 12:50

Caribbean Airport Facilities
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150 Sector Central
Cardina PR 00979

MW3D-

CAT No.	Analysis Name	CAS Number	Result	Method Detection Limit*	Limit of Quantitation	Dilution Factor
GC Volatiles	**SW-846 8015B**		ug/l	ug/l	ug/l	
01635	TPH-GRO water C6-C10	n.a.	N.D.	20	50	1
GC Petroleum Hydrocarbons	**SW-846 8015B**		ug/l	ug/l	ug/l	
08269	TPH-DRO water C10-C28	n.a.	60 J	30	94	1

The recovery for a target analyte(s) in the Laboratory Control Spike(s) is outside the QC acceptance limits as noted on the QC Summary. The following corrective action was taken: The sample was re-extracted outside the method required holding time and the QC is compliant. All results are reported from the first trial. Similar results were obtained in both trials.

General Sample Comments

All QC is compliant unless otherwise noted. Please refer to the Quality Control Summary for overall QC performance data and associated samples.

Laboratory Sample Analysis Record

CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Time	Analyst	Dilution Factor
01635	TPH-GRO water C6-C10	SW-846 8015B	1	16018A20A	01/18/2016 18:56	Jeremy S Biffle	1
01146	GC VOA Water Prep	SW-846 5030B	1	16018A20A	01/18/2016 18:56	Jeremy S Biffle	1
08269	TPH-DRO water C10-C28	SW-846 8015B	1	16016A01A	01/20/2016 01:47	Christian E Delman	1
07003	Extraction - DRO (Waters)	SW-846 3511C	1	16011A01A	01/19/2016 08:30	Bradley M VanLeuven	1

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Sample Description: Trip Blank Water
CAF GW Monitoring Well Construction Project

LL Sample # WW 8204495
LL Group # 1623189
Account # 20530

Project Name: CAF GW Monitoring Well Construction Project (Bimonthly Sampling)

Collected: 12/18/2015

Submitted: 01/13/2016 10:00
Reported: 01/28/2016 12:50

Caribbean Airport Facilities
Suite 7
150 Sector Central
Cardina PR 00979

MW3DT

CAT No.	Analysis Name	CAS Number	Result	Method Detection Limit*	Limit of Quantitation	Dilution Factor
GC Volatiles	**SW-846 8015B**		ug/l	ug/l	ug/l	
01635	TPH-GRO Water C6-C10	n.a.	N.D.	20	50	1

General Sample Comments

All QC is compliant unless otherwise noted. Please refer to the Quality Control Summary for overall QC performance data and associated samples.

Laboratory Sample Analysis Record

CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Time	Analyst	Dilution Factor
01635	TPH-GRO Water C6-C10	SW-846 8015B	1	16014B20A	01/19/2016 18:05	Mario D Bermudez Cal	1
01146	GC VOA Water Prep	SW-846 5030B	1	16014B20A	01/19/2016 18:05	Mario D Bermudez Cal	1

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Environmental Analysis Request/Chain of Custody

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Acct # 20530 Group # 1623189 Sample # 8204475-95

Client: Fernando L. Rodríguez, PE & Associates			
Project Name/#: CAF GW Monitoring Well Construction Project (Bimonthly Sampling)	Site ID #: Caribbean Airport Facilities (L.M.M. Int'l Airport-SJU)		
Project Manager: Fernando L. Rodríguez	P.O. #:		
Sampler: David J. Rios	PWSID #:		
Phone #: 787-751-7810	Quote #:		
State where sample(s) were collected: Puerto Rico			

Sample Identification	Collection Date	Collection Time	Grab	Composite	Matrix: Soil	Sediment	Water	Ground	Potable	Surface	NPDES	Other:	Total # of Containers	Analyses Requested: Preservation Codes H	NaOH/A										
MW-D-xxx	1-12-16	8:04	✓				✓						5	3	2										
MW-G-xxx	1-12-16	8:13	✓				✓						5	3	2										
MW-D-xxx	1-12-16	8:50	✓				✓						5	3	2										
MW-G-xxx	1-12-16	9:01	✓				✓						5	3	2										
MW-D-xxx	1-12-16	9:39	✓				✓						5	3	2										

For Lab Use Only

SF #: _____

SCR #: _____

Preservation Codes: H = HCl; T = Thiosulfate; N = HNO_3; B = NaOH; S = H_2SO_4; P = H_3PO_4; O = Other

Remarks

Turnaround Time Requested (TAT) (please check): Standard ☑ Rush ☐

(Rush TAT is subject to laboratory approval and surcharges.)

Date results are needed:

Rush results requested by (please check): E-Mail ☑ Phone ☐

E-mail Address: hkrodriguez@flraches.com; CC: flrachespr@gmail.com

Phone: 787-751-7810

Data Package Options (please check if required)

Type I (Validation/non-CLP) ☐ MA MCP ☐

Type III (Reduced non-CLP) ☐ CT RCP ☐

Type VI (Raw Data Only) ☐ TX TRRP-13 ☐

NYSDEC Category ☐ A or ☐ B

EDD Required? Yes ☐ No ☐ If yes, format: _____

Relinquished by:	Date	Time	Received by:	Date	Time
Relinquished by	Date	Time	Received by:	Date	Time
Relinquished by	Date	Time	Received by:	Date	Time
Relinquished by	Date	Time	Received by:	Date	Time
Relinquished by	Date	Time	Received by: Joe Huber	1-13-16	10:00

Relinquished by Commercial Carrier: UPS X FedEx _____ Other _____

Temperature upon receipt 16 °C

7045 0614

Environmental Analysis Request/Chain of Custody

eurofins | Lancaster Laboratories Environmental

Acct. # 20530 Group # 1623189 Sample # 8204475-95

Client: Fernando L. Rodríguez, PE & Associates			
Project Name/#: CAF GW Monitoring Well Construction Project (Initial Sampling)		Site ID #: Caribbean Airport Facilities (L.M.M. Int'l Airport-SJU)	
Project Manager: Fernando L. Rodríguez		P.O. #:	
Sampler: David J. Perez		PWSID #:	
Phone # 787-751-7810		Quote #:	
State where sample(s) were collected: Puerto Rico			

Sample Identification	Collection Date	Collection Time	Grab	Composite	Matrix: Soil	Sediment	Potable Water	Ground Water	NPDES	Surface Water	Other: Trip Blank	Total # of Containers	Analyses Requested: TPH GRO	TPH DRO	Preservation Codes	Remarks
Field Blank	1-12-16	11:31		✓							✓	5	3	2		
Equipment Blank	1-12-16	7:41		✓							✓	5	3	2		
MW36 WG H2O	1-12-16	10:24	✓					✓				5	3	2		
MW19 D WG	1-12-16	12:23	✓					✓				5	3	2		
MW46 WG	1-12-16	12:35	✓					✓				5	3	2		

For Lab Use Only

SF #: _____

SCR #: _____

Preservation Codes

H = HCl T = Thiosulfate

N = HNO_3 B = NaOH

S = H_2SO_4 P = H_3PO_4

O = Other

Turnaround Time Requested (TAT) (please check): Standard ☑ Rush ☐

(Rush TAT is subject to laboratory approval and surcharges.)

Date results are needed:

Rush results requested by (please check): E-Mail ☑ Phone ☐

E-mail Address: hkrodriguez@flraches.com; CC: flrachespr@gmail.com

Phone: 787-751-7810

Data Package Options (please check if required)

Type I (Validation/non-CLP) ☐ MA MCP ☐

Type III (Reduced non-CLP) ☐ CT RCP ☐

Type VI (Raw Data Only) ☐ TX TRRP-13 ☐

NYSDEC Category ☐ A or ☐ B

EDD Required? Yes ☐ No ☐ If yes, format: _____

Relinquished by:	Date	Time	Received by:	Date	Time
[signature]	1/12/16	15:10			
Relinquished by:	Date	Time	Received by:	Date	Time
Relinquished by:	Date	Time	Received by:	Date	Time
Relinquished by:	Date	Time	Received by:	Date	Time
Relinquished by:	Date	Time	Received by: [signature]	1-13-16	1000

Relinquished by Commercial Carrier: UPS X FedEx _____ Other _____

Temperature upon receipt 2 °C

7045 0614

Environmental Analysis Request/Chain of Custody

eurofins | Lancaster Laboratories Environmental

Acct. # 20530 Group # 623189 Sample # 8204475-95

Client:	Fernando L. Rodríguez, PE & Associates		
Project Name/#:	CAF GW Monitoring Well Construction Project (Bimonthly Sampling)	Site ID #:	Caribbean Airport Facilities (L.M.M. Int'l Airport-SJU)
Project Manager:	Fernando L. Rodriguez	P.O. #:	
Sampler:	David J. Rios	PWSID #:	
Phone #:	787-751-7810	Quote #:	

State where sample(s) were collected: Puerto Rico

Sample Identification	Collection Date	Collection Time	Grab	Composite	Matrix: Soil	Sediment	Water: Ground	Surface	Potable	NPDES	Other:	Total # of Containers	Preservation Codes: H	NP	Analyses Requested
MW-5D-GW	1-12-16	1310	✓				✓					5	3	2	
MW-5D-GW-D	1-12-16	1312	✓				✓					5	3	2	
MW-5S-GW	1-12-16	1313	✓				✓					5	3	2	
MW-7D-GW	1-12-16	1358	✓				✓					5	3	2	
MW-7S-GW	1-12-16	1405	✓				✓					5	3	2	

For Lab Use Only

SF #: _____

SCR #: _____

Preservation Codes: H = HCl; T = Thiosulfate; N = HNO_3; B = NaOH; S = H_2SO_4; P = H_3PO_4; O = Other

Remarks

Turnaround Time Requested (TAT) (please check): Standard ☑ Rush ☐

(Rush TAT is subject to laboratory approval and surcharges.)

Date results are needed:

Rush results requested by (please check): E-Mail ☑ Phone ☐

E-mail Address: hkrodriguez@flraches.com; CC: flrachespr@gmail.com

Phone: 787-751-7810

Data Package Options (please check if required)

Type I (Validation/non-CLP) ☐ MA MCP ☐

Type III (Reduced non-CLP) ☐ CT RCP ☐

Type VI (Raw Data Only) ☐ TX TRRP-13 ☐

NYSDEC Category ☐ A or ☐ B

EDD Required? Yes ☐ No ☐ If yes, format: _____

Relinquished by:	Date	Time	Received by:	Date	Time
[signature]	1/12/16	1933			
Relinquished by:	Date	Time	Received by:	Date	Time
Relinquished by:	Date	Time	Received by:	Date	Time
Relinquished by:	Date	Time	Received by:	Date	Time
Relinquished by:	Date	Time	Received by: [signature]	1-13-16	1000

Relinquished by Commercial Carrier: UPS X FedEx _____ Other _____

Temperature upon receipt 21 °C

Environmental Analysis Request/Chain of Custody

eurofins | Lancaster Laboratories Environmental

Acct # 20530 Group # 1623189 Sample # 8204475-95

Client: Fernando L. Rodríguez, PE & Associates

Project Name/#: CAF GW Monitoring Well Construction Project (Bimonthly Sampling)

Site ID #: Caribbean Airport Facilities (L.M.M. Int'l Airport-SJU)

Project Manager: Fernando L. Rodríguez

P.O. #:

Sampler: David Perez

PWSID #:

Phone #: 787-751-7810

Quote #:

State where sample(s) were collected: Puerto Rico

Sample Identification	Collection Date	Collection Time	Grab	Composite	Matrix: Soil	Sediment	Water: Potable	Ground	Surface	NPDES	Other: Tap Water	Total # of Containers	Analyses Requested: Preservation Codes: H	N/A	TCL SVOC	TCL PCB
MW-D wbr	1-12-16	9:30	✓				✓					5			3	2
MW-5 wbr Dup	1-12-16	9:42	✓				✓					5			3	2
MW-D wbr	1-12-16	10:12	✓				✓					5			3	2
MW-5 wbr	1-12-16	10:20	✓				✓					5			3	2
MW-5 wbr MS	1-12-16	10:22	✓				✓					5			3	2
Tap Blank	1-12-16										✓	2				

For Lab Use Only

SF #:

SCR #:

Preservation Codes: H = HCl; T = Thiosulfate; N = HNO_3; B = NaOH; S = H_2SO_4; P = H_3PO_4; O = Other

Remarks

Turnaround Time Requested (TAT) (please check): Standard ☑ Rush ☐

(Rush TAT is subject to laboratory approval and surcharges.)

Date results are needed:

Rush results requested by (please check): E-Mail ☑ Phone ☐

E-mail Address: hkrodriguez@flraches.com; CC: flrachespr@gmail.com

Phone: 787-751-7810

Data Package Options (please check if required)

Type I (Validation/non-CLP) ☐ MA MCP ☐

Type III (Reduced non-CLP) ☐ CT RCP ☐

Type VI (Raw Data Only) ☐ TX TRRP-13 ☐

NYSDEC Category ☐ A or ☐ B

ADD Required? Yes ☐ No ☐ If yes, format:

Relinquished by:	Date	Time	Received by:	Date	Time
	1/6/16	1400			
Relinquished by:	Date	Time	Received by:	Date	Time
Relinquished by:	Date	Time	Received by:	Date	Time
Relinquished by:	Date	Time	Received by:	Date	Time
Relinquished by:	Date	Time	Received by:	1/14/16	1000

Relinquished by Commercial Carrier: UPS X FedEx ____ Other ____

Temperature upon receipt 2.6 °C

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Analysis Report

Sample Description: MW4D-W01 Grab Groundwater
CAF GW Monitoring Well Construction Project

LL Sample # WW 8207313
LL Group # 1623732
Account # 20530

Project Name: CAF GW Monitoring Well Construction Project (Bimonthly Sampling)

Collected: 01/13/2016 07:47 by DJP

Submitted: 01/14/2016 10:00
Reported: 01/25/2016 11:32

Caribbean Airport Facilities
Suite 3
150 Sector Central
Cardinn PR 00979

CAF4D

CAT No.	Analysis Name	CAS Number	Result	Method Detection Limit*	Limit of Quantitation	Dilution Factor
GC Volatiles	**SW-846 8015B**		ug/l	ug/l	ug/l	
01635	TPH-GRO Water C6-C10	n.a.	N.D.	20	50	1
GC Petroleum Hydrocarbons	**SW-846 8015B**		ug/l	ug/l	ug/l	
08269	TPH-DRO Water C10-C28	n.a.	140	31	96	1

General Sample Comments

All QC is compliant unless otherwise noted. Please refer to the Quality Control Summary for overall QC performance data and associated samples.

Laboratory Sample Analysis Record

CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Time	Analyst	Dilution Factor
01635	TPH-GRO Water C6-C10	SW-846 8015B	1	160182A20A	01/18/2016 18:19	Jeremy C Sutter	1
01146	GC VOA Water Prep	SW-846 5030B	1	160182A20A	01/18/2016 18:19	Jeremy C Sutter	1
08269	TPH-DRO Water C10-C28	SW-846 8015B	1	160180009A	01/21/2016 17:29	Christine E Dolman	1
07003	Extraction - DRO (Waters)	SW-846 3510C	1	160180009A	01/20/2016 12:24	Denise L Trimby	1

*=This limit was used in the evaluation of the final result

Sample Description: MW4S-W01 Grab Groundwater
CAF GW Monitoring Well Construction Project

LL Sample # WW 8207314
LL Group # 1623732
Account # 20530

Project Name: CAF GW Monitoring Well Construction Project (Bimonthly Sampling)

Collected: 01/13/2016 07:55 by DJP

Submitted: 01/14/2016 10:00
Reported: 01/25/2016 11:32

Caribbean Airport Facilities
Suite 7
150 Sector Central
Cardima PR 00979

CAF4S

CAT No.	Analysis Name	CAS Number	Result	Method Detection Limit*	Limit of Quantitation	Dilution Factor
GC Volatiles	**SW-846 8015B**		ug/l	ug/l	ug/l	
01635	TPH-GRO Water C6-C10	n.a.	N.D.	200	250	5
Reporting limits were raised due to sample foaming.						
GC Petroleum Hydrocarbons	**SW-846 8015B**		ug/l	ug/l	ug/l	
08269	TPH-DRO Water C10-C28	n.a.	4,700	31	95	1

General Sample Comments

All QC is compliant unless otherwise noted. Please refer to the Quality Control Summary for overall QC performance data and associated samples.

Laboratory Sample Analysis Record

CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Time	Analyst	Dilution Factor
01635	TPH-GRO Water C6-C10	SW-846 8015B	1	16020B20A	01/21/2016 14:25	Jeremy T Biffle	5
01146	GC VOA Water Prep	SW-846 5030B	1	16020B20A	01/21/2016 14:25	Jeremy T Biffle	5
08269	TPH-DRO Water C10-C28	SW-846 8015B	1	16019P0009A	01/21/2016 20:45	Christine E Dalman	1
07003	Extraction - DRO (Waters)	SW-846 3510C	1	16019P0009A	01/21/2016 11:28	Dennis T Trimbo	1

*=This limit was used in the evaluation of the final result

Sample Description: MW2D-W01 Grab Groundwater
CAF GW Monitoring Well Construction Project

LL Sample # WW 8207315
LL Group # 1623732
Account # 20530

Project Name: CAF GW Monitoring Well Construction Project (Bimonthly Sampling)

Collected: 01/13/2016 08:27 by DJP

Submitted: 01/14/2016 10:00
Reported: 01/25/2016 11:32

Caribbean Airport Facilities
Suite 3
150 Sector Central
Cardina PR 00979

CAF2D

CAT No.	Analysis Name	CAS Number	Result		Method Detection Limit*	Limit of Quantitation	Dilution Factor
GC Volatiles	**SW-846 8015B**		ug/l		ug/l	ug/l	
01635	TPH-GRO water C6-C10	n.a.	45	J	20	50	1
GC Petroleum Hydrocarbons	**SW-846 8015B**		ug/l		ug/l	ug/l	
08269	TPH-DRO water C10-C28	n.a.	220		31	96	1

General Sample Comments

All QC is compliant unless otherwise noted. Please refer to the Quality Control Summary for overall QC performance data and associated samples.

Laboratory Sample Analysis Record

CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Time	Analyst	Dilution Factor
01635	TPH-GRO water C6-C10	SW-846 8015B	1	16018A30A	01/18/2016 18:14	Jeremy C Siffrin	1
01146	GC VOA Water Prep	SW-846 5030B	1	16018A29A	01/18/2016 18:14	Jeremy C Siffrin	1
08269	TPH-DRO water C10-C28	SW-846 8015B	1	16013000 9A	01/21/2016 13:12	Christine F Dolman	1
07003	Extraction - DRO (Waters)	SW-846 3510C	1	16013000 9A	01/20/2016 12:25	Denise L Tilmay	1

*=This limit was used in the evaluation of the final result

Sample Description: MW2S-W01 Grab Groundwater
CAF GW Monitoring Well Construction Project

LL Sample # WW 8207316
LL Group # 1623732
Account # 20530

Project Name: CAF GW Monitoring Well Construction Project (Bimonthly Sampling)

Collected: 01/13/2016 10:04 by DJP

Submitted: 01/14/2016 10:00
Reported: 01/25/2016 11:32

Caribbean Airport Facilities
Suite 7
150 Sector Central
Cardina PR 00979

CAF2S

CAT No.	Analysis Name	CAS Number	Result	Method Detection Limit*	Limit of Quantitation	Dilution Factor
GC Volatiles	**SW-846 8015B**		ug/l	ug/l	ug/l	
01635	TPH-GRO water C6-C10	n.a.	N.D.	100	250	5
GC Petroleum Hydrocarbons	**SW-846 8015B**		ug/l	ug/l	ug/l	
08269	TPH-DRO water C10-C28	n.a.	1,100	30	95	1

General Sample Comments

All QC is compliant unless otherwise noted. Please refer to the Quality Control Summary for overall QC performance data and associated samples.

Laboratory Sample Analysis Record

CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Time	Analyst	Dilution Factor
01635	TPH-GRO water C6-C10	SW-846 8015B	1	160228B20A	01/21/2016 14:47	Jeremy C Siffrin	5
01146	GC VOA Water Prep	SW-846 5030B	1	160228B20A	01/21/2016 14:47	Jeremy C Siffrin	5
08269	TPH-DRO water C10-C28	SW-846 8015B	1	160130009A	01/21/2016 21:06	Christine E Tallman	1
07003	Extraction - DRO (Waters)	SW-846 3510C	1	160130009A	01/20/2016 15:30	Denise L Trimby	1

*=This limit was used in the evaluation of the final result

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Analysis Report

Sample Description: MW1S-W01 Grab Groundwater
CAF GW Monitoring Well Construction Project

LL Sample # WW 8207317
LL Group # 1623732
Account # 20530

Project Name: CAF GW Monitoring Well Construction Project (Bimonthly Sampling)

Collected: 01/13/2016 10:43 by DJP

Submitted: 01/14/2016 10:00
Reported: 01/25/2016 11:32

Caribbean Airport Facilities
Suite 3
150 Sector Central
Cardina PR 00979

CAF1S

CAT No.	Analysis Name	CAS Number	Result	Method Detection Limit*	Limit of Quantitation	Dilution Factor
GC Volatiles	**SW-846 8015B**		ug/l	ug/l	ug/l	
01635	TPH-GRO water C6-C10	n.a.	N.D	20	50	1
GC Petroleum Hydrocarbons	**SW-846 8015B**		ug/l	ug/l	ug/l	
08269	TPH-DRO Water C10-C28	n.a.	390	30	95	1

General Sample Comments

All QC is compliant unless otherwise noted. Please refer to the Quality Control Summary for overall QC performance data and associated samples.

Laboratory Sample Analysis Record

CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Time	Analyst	Dilution Factor
01635	TPH-GRO water C6-C10	SW-846 8015B	1	160210B30A	01/21/2016 19:55	Jeremy C Biffle	1
01146	GC VOA Water Prep	SW-846 5030B	1	160210B20A	01/21/2016 11:07	Jeremy C Biffle	1
08269	TPH-DRO water C10-C28	SW-846 8015B	1	160190009A	01/21/2016 15:34	Christina E Dallman	1
07003	Extraction - DRO (Waters)	SW-846 3510C	1	160190009A	01/20/2016 11:21	Denise L Trimby	1

*=This limit was used in the evaluation of the final result

Sample Description: MW1D-W01 Grab Groundwater
CAF GW Monitoring Well Construction Project

LL Sample # WW 8207318
LL Group # 1623732
Account # 20530

Project Name: CAF GW Monitoring Well Construction Project (Bimonthly Sampling)

Collected: 01/13/2016 10:33 by DJP

Submitted: 01/14/2016 10:00
Reported: 01/25/2016 11:32

Caribbean Airport Facilities
Suite 3
150 Sector Central
Cardina PR 00979

CAF1D

CAT No.	Analysis Name	CAS Number	Result		Method Detection Limit*	Limit of Quantitation	Dilution Factor
GC Volatiles	**SW-846 8015B**		ug/l		ug/l	ug/l	
01635	TPH-GRO water C6-C10	n.a.	28	J	20	50	1
GC Petroleum Hydrocarbons	**SW-846 8015B**		ug/l		ug/l	ug/l	
08269	TPH-DRO water C10-C28	n.a.	130		31	95	1

General Sample Comments

All QC is compliant unless otherwise noted. Please refer to the Quality Control Summary for overall QC performance data and associated samples.

Laboratory Sample Analysis Record

CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Time	Analyst	Dilution Factor
01635	TPH-GRO water C6-C10	SW-846 8015B	1	16013A30A	01/18/2016 20:37	Jeremy C Siffrin	1
01146	GC VOA Water Prep	SW-846 5030B	1	16013A20A	01/18/2016 20:37	Jeremy C Siffrin	1
08269	TPH-DRO water C10-C28	SW-846 8015B	1	160130009A	01/21/2016 17:07	Christine R Dollman	1
07003	Extraction - DRO (Waters)	SW-846 3510C	1	160130009A	01/20/2016 11:20	Denise L Trimmer	1

*=This limit was used in the evaluation of the final result

Sample Description: MW8D-W01 Grab Groundwater
CAF GW Monitoring Well Construction Project

LL Sample # WW 8207319
LL Group # 1623732
Account # 20530

Project Name: CAF GW Monitoring Well Construction Project (Bimonthly Sampling)

Collected: 01/13/2016 11:12 by DJP

Submitted: 01/14/2016 10:00
Reported: 01/25/2016 11:32

Caribbean Airport Facilities
Suite 3
150 Sector Central
Cardina PR 00979

CAF8D

CAT No.	Analysis Name	CAS Number	Result		Method Detection Limit*	Limit of Quantitation	Dilution Factor
GC Volatiles	**SW-846 8015B**		ug/l		ug/l	ug/l	
01635	TPH-GRO water C6-C10	n.a.	61	J	20	50	1
GC Petroleum Hydrocarbons	**SW-846 8015B**		ug/l		ug/l	ug/l	
08269	TPH-DRO water C10-C28	n.a.	490		30	95	1

General Sample Comments

All QC is compliant unless otherwise noted. Please refer to the Quality Control Summary for overall QC performance data and associated samples.

Laboratory Sample Analysis Record

CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Time	Analyst	Dilution Factor
01635	TPH-GRO water C6-C10	SW-846 8015B	1	16018A20A	01/18/2016 21:04	Jeremy C Biffle	1
01146	GC VOA Water Prep	SW-846 5030B	1	16018A20A	01/18/2016 21:04	Jeremy C Biffle	1
08269	TPH-DRO water C10-C28	SW-846 8015B	1	16019B09A	01/22/2016 20:01	Christine E Hartman	1
07003	Extraction - DRO (Waters)	SW-846 3510C	1	16019B09A	01/20/2016 11:25	Denise L Trimby	1

*=This limit was used in the evaluation of the final result

LL Sample # WW 8207320
LL Group # 1623732
Account # 20530

Sample Description: MW8S-W01 Grab Groundwater
CAF GW Monitoring Well Construction Project

Project Name: CAF GW Monitoring Well Construction Project (Bimonthly Sampling)

Collected: 01/13/2016 11:19 by DJP

Submitted: 01/14/2016 10:00
Reported: 01/25/2016 11:32

Caribbean Airport Facilities
Suite 3
150 Sector Central
Cardina PR 00979

CAF8S

CAT No.	Analysis Name	CAS Number	Result	Method Detection Limit*	Limit of Quantitation	Dilution Factor
GC Volatiles	**SW-846 8015B**		ug/l	ug/l	ug/l	
01635	TPH-GRO Water C6-C10	n.a.	N.D.	20	50	1
GC Petroleum Hydrocarbons	**SW-846 8015B**		ug/l	ug/l	ug/l	
08269	TPH-DRO Water C10-C28	n.a.	150	30	95	1

General Sample Comments

All QC is compliant unless otherwise noted. Please refer to the Quality Control Summary for overall QC performance data and associated samples.

Laboratory Sample Analysis Record

CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Time	Analyst	Dilution Factor
01635	TPH-GRO Water C6-C10	SW-846 8015B	1	16013A20A	01/19/2016 15:06	Jeremy C Giffin	1
01146	GC VOA Water Prep	SW-846 5030B	1	16013A20A	01/19/2016 15:06	Jeremy C Giffin	1
08269	TPH-DRO Water C10-C28	SW-846 8015B	1	16012A09A	01/21/2016 15:56	Christine E Dolman	1
07003	Extraction - DRO (Waters)	SW-846 3510C	1	16012A09A	01/20/2016 11:26	Denise L Trimmer	1

COLEGIO QUIMICO ASOCIADO DE PUERTO RICO
Rafael Infante Morales
1888
QUIMICO LICENCIADO

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Analysis Report

2425 New Holland Pike, Lancaster, PA 17601 • 717-656-2300 • Fax: 717-656-2681 • www.LancasterLabs.com

Sample Description: MW8S-W01 MS Grab Groundwater
CAF GW Monitoring Well Construction Project

LL Sample # WW 8207321
LL Group # 1623732
Account # 20530

Project Name: CAF GW Monitoring Well Construction Project (Bimonthly Sampling)

Collected: 01/13/2016 11:21 by DJP

Submitted: 01/14/2016 10:00
Reported: 01/25/2016 11:32

Caribbean Airport Facilities
Suite 3
150 Sector Central
Cardina PR 00979

CAF8S

CAT No.	Analysis Name	CAS Number	Result	Method Detection Limit*	Limit of Quantitation	Dilution Factor
GC Volatiles	**SW-846 8015B**		ug/l	ug/l	ug/l	
01635	TPH-GRO Water C6-C10	n.a.	1,200	20	50	1
GC Petroleum Hydrocarbons	**SW-846 8015B**		ug/l	ug/l	ug/l	
08269	TPH-DRO Water C10-C28	n.a.	1,400	30	94	1

General Sample Comments

All QC is compliant unless otherwise noted. Please refer to the Quality Control Summary for overall QC performance data and associated samples.

Laboratory Sample Analysis Record

CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Time	Analyst	Dilution Factor
01635	TPH-GRO Water C6-C10	SW-846 8015B	1	16013A20A	01/19/2016 15:34	Jeremy C Giffin	1
01146	GC VOA Water Prep	SW-846 5030B	1	16013A20A	01/19/2016 15:34	Jeremy C Giffin	1
08269	TPH-DRO Water C10-C28	SW-846 8015B	1	16019A09A	01/22/2016 19:17	Christine E Dolman	1
07003	Extraction - DRO (Waters)	SW-846 3510C	1	16019A09A	01/20/2016 11:25	Denise L Trimmy	1

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QUÍMICO LICENCIADO

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Analysis Report

Sample Description: MW8S-W01 MSD Grab Groundwater
CAF GW Monitoring Well Construction Project

LL Sample # WW 8207322
LL Group # 1623732
Account # 20530

Project Name: CAF GW Monitoring Well Construction Project (Bimonthly Sampling)

Collected: 01/13/2016 11:23 by DJP

Submitted: 01/14/2016 10:00
Reported: 01/25/2016 11:32

Caribbean Airport Facilities
Suite 3
150 Sector Central
Cardina PR 00979

CAF8S

CAT No.	Analysis Name	CAS Number	Result	Method Detection Limit*	Limit of Quantitation	Dilution Factor
GC Volatiles	**SW-846 8015B**		ug/l	ug/l	ug/l	
01635	TPH-GRO water C6-C10	n.a.	1,200	20	50	1
GC Petroleum Hydrocarbons	**SW-846 8015B**		ug/l	ug/l	ug/l	
08269	TPH-DRO water C10-C28	n.a.	1,600	30	95	1

General Sample Comments

All QC is compliant unless otherwise noted. Please refer to the Quality Control Summary for overall QC performance data and associated samples.

Laboratory Sample Analysis Record

CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Time	Analyst	Dilution Factor
01635	TPH-GRO water C6-C10	SW-846 8015B	1	16018A20A	01/18/2016 16:02	Jeremy C Griffin	1
01146	GC VOA Water Prep	SW-846 5030B	1	16018A20A	01/18/2016 16:02	Jeremy C Griffin	1
08269	TPH-DRO water C10-C28	SW-846 8015B	1	160190009A	01/21/2016 19:39	Christine E Dolman	1
07003	Extraction - DRO (Waters)	SW-846 3510C	1	160190009A	01/20/2016 11:21	Denise L Trimpy	1

*=This limit was used in the evaluation of the final result

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Analysis Report

Sample Description: Equipment Blank Composite Water
CAF GW Monitoring Well Construction Project

LL Sample # WW 8207323
LL Group # 1623732
Account # 20530

Project Name: CAF GW Monitoring Well Construction Project (Bimonthly Sampling)

Collected: 01/13/2016 07:35 by DJP

Submitted: 01/14/2016 10:00
Reported: 01/25/2016 11:32

Caribbean Airport Facilities
Suite 3
150 Sector Central
Cardina PR 00979

CAFEB

CAT No.	Analysis Name	CAS Number	Result	Method Detection Limit*	Limit of Quantitation	Dilution Factor
GC Volatiles	**SW-846 8015B**		ug/l	ug/l	ug/l	
01635	TPH-GRO water C6-C10	n.a.	N.D.	20	50	1
GC Petroleum Hydrocarbons	**SW-846 8015B**		ug/l	ug/l	ug/l	
08269	TPH-DRO water C10-C28	n.a.	140	31	97	1

General Sample Comments

All QC is compliant unless otherwise noted. Please refer to the Quality Control Summary for overall QC performance data and associated samples.

Laboratory Sample Analysis Record

CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Time	Analyst	Dilution Factor
01635	TPH-GRO water C6-C10	SW-846 8015B	1	160184A30A	01/19/2016 13:44	Jeremy C Siffrin	1
01146	GC VOA Water Prep	SW-846 5030B	1	160184A20A	01/19/2016 13:44	Jeremy C Siffrin	1
08269	TPH-DRO water C10-C28	SW-846 8015B	1	160190009A	01/21/2016 20:25	Christine E Dolman	1
07003	Extraction - DRO (Waters)	SW-846 3510C	1	160190009A	01/20/2016 12:20	Denise L Trimby	1

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Analysis Report

Sample Description: Field Blank Composite Water
CAF GW Monitoring Well Construction Project

LL Sample # WW 8207324
LL Group # 1623732
Account # 20530

Project Name: CAF GW Monitoring Well Construction Project (Bimonthly Sampling)

Collected: 01/13/2016 07:29 by DJP
through 01/13/2016 11:26
Submitted: 01/14/2016 10:00
Reported: 01/25/2016 11:32

Caribbean Airport Facilities
Suite 7
150 Sector Central
Cardina PR 00979

CAFFB

CAT No.	Analysis Name	CAS Number	Result	Method Detection Limit*	Limit of Quantitation	Dilution Factor
GC Volatiles	**SW-846 8015B**		ug/l	ug/l	ug/l	
01635	TPH-GRO water C6-C10	n.a.	N.D.	20	50	1
GC Petroleum Hydrocarbons	**SW-846 8015B**		ug/l	ug/l	ug/l	
08269	TPH-DRO water C10-C28	n.a.	N.D.	31	96	1

General Sample Comments

All QC is compliant unless otherwise noted. Please refer to the Quality Control Summary for overall QC performance data and associated samples.

Laboratory Sample Analysis Record

CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Time	Analyst	Dilution Factor
01635	TPH-GRO water C6-C10	SW-846 8015B	1	160184A20A	01/18/2016 14:11	Jeremy C Giffin	1
01146	GC VOA Water Prep	SW-846 5030B	1	160184A20A	01/18/2016 14:11	Jeremy C Giffin	1
08269	TPH-DRO water C10-C28	SW-846 8015B	1	160190009A	01/21/2016 17:51	Christine E Dellman	1
07003	Extraction - DRO (Waters)	SW-846 3510C	1	160190009A	01/20/2016 11:25	Denise L Trimmy	1

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Analysis Report

Sample Description: Trip Blank Water
CAF GW Monitoring Well Construction Project

LL Sample # WW 8207325
LL Group # 1623732
Account # 20530

Project Name: CAF GW Monitoring Well Construction Project (Bimonthly Sampling)

Collected: 01/13/2016

Submitted: 01/14/2016 10:00
Reported: 01/25/2016 11:32

Caribbean Airport Facilities
Suite 3
150 Sector Central
Cardina PR 00979

CAFTB

CAT No.	Analysis Name	CAS Number	Result	Method Detection Limit*	Limit of Quantitation	Dilution Factor
GC Volatiles	**SW-846 8015B**		ug/l	ug/l	ug/l	
01635	TPH-GRO water C6-C10	n.a.	N.D	20	50	1

General Sample Comments

All QC is compliant unless otherwise noted. Please refer to the Quality Control Summary for overall QC performance data and associated samples.

Laboratory Sample Analysis Record

CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Time	Analyst	Dilution Factor
01635	TPH-GRO water C6-C10	SW-846 8015B	1	16015A20A	01/19/2016 14:39	Jeremy S Griffin	1
01146	GC VOA Water Prep	SW-846 5030B	1	16015A20A	01/19/2016 14:39	Jeremy S Griffin	1

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Environmental Analysis Request/Chain of Custody

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Acct. # 20530 Group # 1623732 Sample # 8207313-25

Client:	Fernando L. Rodriguez, PE & Associates		
Project Name/#:	CAF GW Monitoring Well Construction Project (Initial Sampling) Bimonthly	Site ID #:	Caribbean Airport Facilities (L.M.M. Int'l Airport-SJU)
Project Manager:	Fernando L. Rodríguez	P.O. #:	
Sampler:	David J. Perez	PWSID #:	
Phone #:	787-751-7810	Quote #:	
State where sample(s) were collected:	Puerto Rico		

Sample Identification	Collection Date	Collection Time	Grab	Composite	Matrix: Soil	Sediment	Water: Potable	Ground	NPDES	Surface	Other:	Total # of Containers	Analyses Requested: Preservation Codes: H	S/A	TPH GRO	TPH DRO
MW4D WO1	1-13-16	7:47	✓				✓					5			3	2
MW4S WO1	1-13-16	7:53	✓				✓					5			3	2
MW2D WO1	1-13-16	8:27	✓				✓					5			3	2
MW2S WO1	1-13-16	10:04	✓				✓					5			3	2
MW1S WO1	1-13-16	10:43	✓				✓					5			3	2

For Lab Use Only

SF #: _____

SCR #: _____

Preservation Codes

H = HCl T = Thiosulfate

N = HNO_3 B = NaOH

S = H_2SO_4 P = H_3PO_4

O = Other

Remarks

Turnaround Time Requested (TAT) (please check): Standard ☑ Rush ☐

(Rush TAT is subject to laboratory approval and surcharges.)

Date results are needed:

Rush results requested by (please check): E-Mail ☑ Phone ☐

E-mail Address: hkrodriguez@flraches.com; CC: flrachespr@gmail.com

Phone: 787-751-7810

Data Package Options (please check if required)

Type I (Validation/non-CLP) ☐ MA MCP ☐

Type III (Reduced non-CLP) ☐ CT RCP ☐

Type VI (Raw Data Only) ☐ TX TRRP-13 ☐

NYSDEC Category ☐ A or ☐ B

EDD Required? Yes ☐ No ☐ If yes, format: _____

	Relinquished by:	Date	Time	Received by:	Date	Time
1		1/13/16	11:40			
2	Relinquished by:	Date	Time	Received by:	Date	Time
3	Relinquished by:	Date	Time	Received by:	Date	Time
4	Relinquished by:	Date	Time	Received by:	Date	Time
5	Relinquished by:	Date	Time	Received by:	1-14-16	1000

Relinquished by Commercial Carrier: UPS X FedEx _____ Other _____

Temperature upon receipt 1.2-1.9 °C

Environmental Analysis Request/Chain of Custody

eurofins | Lancaster Laboratories Environmental

Acct. # 20530 Group # 1623732 Sample # 820 7313-25

Client: Fernando L. Rodriguez, PE & Associates			
Project Name/#: CAF GW Monitoring Well Construction Project (Initial Sampling) Bimonthly	Site ID #: Caribbean Airport Facilities (L.M.M. Int'l Airport-SJU)		
Project Manager: Fernando L. Rodriguez	P.O. #:		
Sampler: David J Frias	PWSID #:		
Phone #: 787-751-7810	Quote #:		
State where sample(s) were collected: Puerto Rico			

Sample Identification	Collection Date	Collection Time	Grab	Composite	Matrix: Soil	Sediment	Water	Ground	Potable	Surface	NPDES	Other:	Total # of Containers	Analyses Requested: TPH GRO (H)	Analyses Requested: TPH DRO (N/A)
MwD: D wo:	1-13-16	10:33	✓				✓						5	3	2
MwDB D wo:	1-13-16	11:12	✓				✓						5	3	2
MwDB3 wo:	1-13-16	11:19	✓				✓						5	3	2
MwDB5 wo: MS	1-13-16	11:21	✓				✓						5	3	2
MwDB5 wo: MSD	1-13-16	11:23	✓				✓						5	3	2

Preservation Codes: H = HCl; N = HNO_3; S = H_2SO_4; O = Other; T = Thiosulfate; B = NaOH; P = H_3PO_4

For Lab Use Only: SF #: ; SCR #:

Remarks:

Turnaround Time Requested (TAT) (please check): Standard ☑ Rush ☐
(Rush TAT is subject to laboratory approval and surcharges.)

Date results are needed:

Rush results requested by (please check): E-Mail ☑ Phone ☐

E-mail Address: hkrodriguez@flraches.com; CC: flrachespr@gmail.com

Phone: 787-751-7810

Data Package Options (please check if required)

lidation/non-CLP)	☐	MA MCP	☐
d non-CLP)	☐	CT RCP	☐
	☐	TX TRRP-13	☐

Category ☐ A or ☐ B

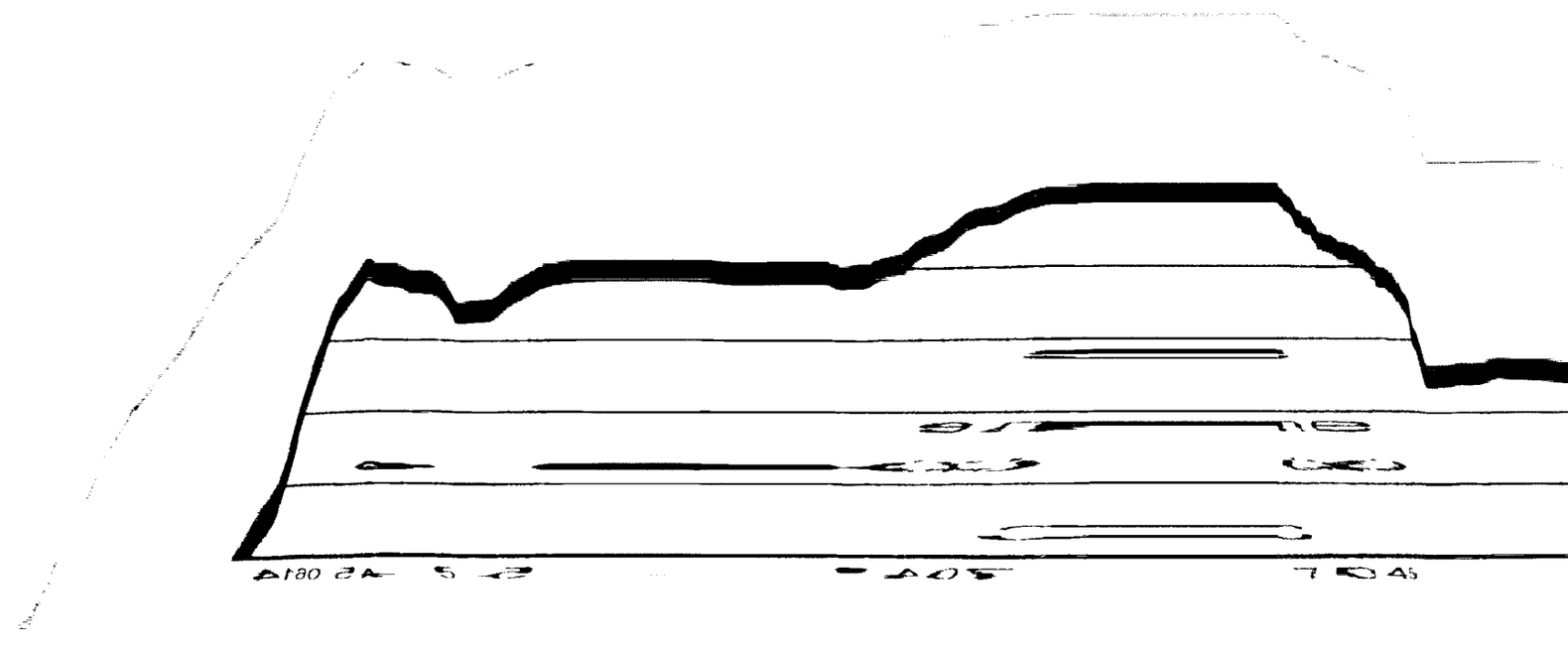
No ☐ If yes, format:

Relinquished by:	Date	Time	Received by:	Date	Time
[signature]	1/13/16	1630			
Relinquished by:	Date	Time	Received by:	Date	Time
Relinquished by:	Date	Time	Received by:	Date	Time
Relinquished by:	Date	Time	Received by:	Date	Time
Relinquished by:	Date	Time	Received by: [signature]	1-15-16	8:15

Relinquished by Commercial Carrier: UPS X FedEx ____ Other ____

Temperature upon receipt 4.8 °C

7045 0614



APPENDIX B

Data Review Worksheets

Caribbean Airport Facility

Type of validation Full:_____
Project Number: _____ Date:_____

REVIEW OF SEMIVOLATILE ORGANIC (SVOCs) PACKAGE

The following guidelines for evaluating volatile organics were created to delineate required validation actions. This document will assist the reviewer in using professional judgment to make more informed decision and in better serving the needs of the data users. The sample results were assessed according to USEPA data validation guidance documents in the following order of precedence *Data Validation Standard Operating Procedure for Organic Analysis of Low/Medium Concentration Semivolatile Acquired using SW-846 Method 8270C* (SOW SOM01.2- SOP HW-35, August 2009 – Revision 1); Validation Semivolatile Organic Compounds by SW846 8270 (SOP HW-22, August, 2009 – Revision 4) (noted herein as the "primary guidance document"), Also, QC criteria from *"Test Methods for Evaluating Solid Waste, Physical/Chemical Methods SW-846 (Final Update III, December 1996),"* specifically for *Methods 8000/8270C* are utilized. The QC criteria and data validation actions listed on the data review worksheets are from the primary guidance document, unless otherwise noted.
The hardcopied (laboratory name) _____ data package received has been reviewed and the quality control and performance data summarized. The data review for SVOCs included:

Lab. Project/SDG No.: _____
Sample matrix: _____ No. of Samples: _____
Field blank No.:_____
Trip blank No.:_____
Equipment blank No.: _____
Field duplicate No.:_____

_____ Data Completeness
_____ Holding Times
_____ GC/MS Tuning
_____ Internal Standard Performance
_____ Blanks
_____ Surrogate Recoveries
_____ Matrix Spike/Matrix Spike Duplicate
_____ Laboratory Control Spikes
_____ Field Duplicates
_____ Calibrations
_____ Compound Identifications
_____ Compound Quantitation
_____ Quantitation Limits

Overall Comments: _____
_____

Definition of Qualifiers:

J- Estimated results
U- Compound not detected
R- Rejected data
UJ- Estimated nondetect

Reviewer:_____
Date:_____

All criteria were met ____
Criteria were not met and/or see below _____

I. DATA COMPLETNESS
A. Data Package:

MISSING INFORMATION DATE LAB. CONTACTED DATE RECEIVED

B. Other Discrepancies:

All criteria were met _____
Criteria were not met and/or see below _____

HOLDING TIMES
The objective of this parameter is to ascertain the validity of the results based on the holding time of the sample from time of collection to the time of extraction, and subsequently from the time of extraction to the time of analysis.

Complete table for all samples and note the analysis and/or preservation not within criteria

SAMPLE ID	DATE SAMPLED	DATE EXTRACTED	DATE ANALYZED	ACTION

Criteria

Extraction HT: Aqueous extract within 7 days from sample collection, Soil: extract within 14 days.
Analysis HT: Aqueous and soil samples: analysis within 40 days from date of sample extraction.
Cooler temperature (Criteria: 4 $\pm$ 2 ^{o}C):_____

Actions: Qualify positive results/nondetects as follows:

If holding times are exceeded, estimate positive results (J) and nondetects (UJ).
If holding times are grossly exceeded, use professional judgment to qualify data. The data reviewer may choose to estimate positive results (J) and rejects nondetects (R).
If samples were not at the proper temperature (> 10^{o}C), use professional judgment to qualify the results.

All criteria were met _____
Criteria were not met and/or see below _____

GC/MS TUNING

The assessment of the tuning results is to determine if the sample instrumentation is within the standard tuning QC limits

____ The DFTPP performance results were reviewed and found to be within the specified criteria. If ion abundance criteria were not met, use professional judgment to qualify results. If mass assignment is in error (e.g., m/z 199 as base peak instead of m/z 198), all associated data are rejected (R).

____ All samples were analyzed within 12 hours of the DFTPP tuning. If no, use professional judgment to determine if qualification is appropriate.

List the samples affected: _____
_____
_____
_____

All criteria were met ___X___
Criteria were not met and/or see below _____

CALIBRATIONS VERIFICATION

Compliance requirements for satisfactory instrument calibration are established to ensure that the instrument is capable of producing and maintaining acceptable quantitative data.

Date of initial calibration:_____
Dates of continuing calibration:_____
Instrument ID numbers:_____
Matrix/Level:_____

DATE	LAB FILE ID#	ANALYTE	CRITERIA OUT RFs, %RSD, %D, r	SAMPLES AFFECTED

Criteria- ICAL
All RFs must be > 0.05 for all analytes.
All %RSD must be $\leq$ 15 or correlation coefficients (r) > 0.99 for all except: %RPDs $\leq$ 30% for CCCs:

Base Neutral:	1,4-Dichlorobenzene	Fluoranthene	Acid:	Phenol
	Hexachlorobutadiene	Di-n-octyl-phthalate		2-Nitrophenol
	Acenaphthene	Benzo(a)pyrene		2,4-Dichlorophenol
	Diphenylamine[1]			4-Chloro-3-methylphenol

Criteria- CCAL

RFs $\geq$ for SPCCs (N-nitroso-di-n-propylamine, hexachlorocyclopentadiene, 2,4-nitrophenol, and 4-nitrophenol)
All percent differences (%Ds) must be $\leq$ 20%.

Actions:

If RF < 0.05, estimate positive results (J) and reject nondetects (R).
If %RSD > 35% for target compounds (> 30 for CCCs) or a correlation coefficient < 0.99, estimate positive results (J) and use professional judgment to qualify nondetects.
If % D > 20%, estimate positive results (J) and nondetects (UJ).

A separate worksheet should be filled for each initial curve

[1] Cannot be separated from N-Nitrosodiphenylamine

All criteria were met ___
Criteria were not met and/or see below _____

V A. BLANK ANALYSIS RESULTS (Sections 1 & 2)

The assessment of the blank analysis results is to determine the existence and magnitude of contamination problems. The criteria for evaluation of blanks apply only to blanks associated with the samples, including trip, equipment, and laboratory blanks. If problems with any blanks exist, all data associated with the case must be carefully evaluated to determine whether or not there is an inherent variability in the data for the case, or if the problem is an isolated occurrence not affecting other data.

List the contamination in the blanks below. High and low levels blanks must be treated separately.

Laboratory blanks

DATE ANALYZED	LAB ID	LEVEL/ MATRIX	COMPOUND	CONCENTRATION UNITS

Field/Trip/Equipment

DATE ANALYZED	LAB ID	LEVEL/ MATRIX	COMPOUND	CONCENTRATION UNITS

All criteria were met ____
Criteria were not met and/or see below _____

V B. BLANK ANALYSIS RESULTS (Section 3)

Blank Actions

The ALs for samples which have been diluted should be corrected for the sample dilution factor and/or % moisture, where applicable. No positive sample results should be reported unless the concentration of the compound in the samples exceeds the ALs of 10x the amount in the blank for the common contaminants (phthalates), or 5x the amount of any other compound. Specific actions area as follows:

If the concentration is < sample quantitation limit (SQL) and < AL, report the compound as not detected (U) at the SQL.
If the concentration is $\geq$ SQL but < AL, report the compound as not detected (U) at the reported concentration.
If the concentration is > AL, report the concentration unqualified.

All criteria were met _____
Criteria were not met and/or see below ____

SURROGATE SPIKE RECOVERIES

Laboratory performance of individual samples is established by evaluation of surrogate spike recoveries. All samples are spiked with surrogate compounds prior to sample analysis. The accuracy of the analysis is measured by the surrogate percent recovery. Since the effects of the sample matrix are frequently outside the control of the laboratory and may present relatively unique problems, the validation of data is frequently subjective and demands analytical experience and professional judgment.
List the percent recoveries (%Rs) which do not meet the criteria for surrogate recovery.
Matrix: solid/aqueous

SAMPLE ID	BASE/NEUTRAL SURROGATE COMPOUND			ACTION
	NBZ	FBP	TPH	

QC Limits* (Aqueous)
_____LL_to_UL___ ____to_____ ___to_____ ___to_____
QC Limits* (Solid)
_____LL_to_UL___ ____to_____ ___to_____ ___to_____

SAMPLE ID	ACID SURROGATE COMPOUND			ACTION
	PHL	2FP	TBP	

QC Limits* (Aqueous)
_____LL_to_UL___ ____to_____ ___to_____ ___to_____
QC Limits* (Solid)
_____LL_to_UL___ ____to_____ ___to_____ ___to_____

NBZ = Nitrobenzene-d5 PHL = Phenol-d5
FBP = 2-Fluorobiphenyl 2FP = 2-Fluorophenol
TPH = Terphenyl-d14 TBP = 2,4,6-Tribromophenol

* Surrogate recoveries must fall between laboratory QC limits. If any surrogate is out of QC limits, there should be reanalysis to confirm that the noncompliance is due to sample matrix effects rather than laboratory deficiencies.

Actions:

Data are not qualified unless two or more surrogate %Rs within the same fraction (base/neutral or acid) are out of specification but > 10% or one surrogate %R within the same fraction < 10%. If surrogate %Rs are outside QC limit due to dilution, use professional judgment to qualify sample data. Surrogate action should be applied as follow:

QUALIFY RESULTS WITHIN THE SAME FRACTION (BASE/NEUTRAL OR ACID)	%R < 10%	%R = 10% - LL	%R > UL
Positive results	J	J	J
Nondetects results	R	UJ	Accept

All criteria were met _____
Criteria were not met and/or see below _____

VII. A MATRIX SPIKE/MATRIX SPIKE DUPLICATE (MS/MSD)

This data is generated to determine long term precision and accuracy in the analytical method for various matrices. This data alone cannot be used to evaluate the precision and accuracy of individual samples.

MS/MSD Recoveries and Precision Criteria

Sample ID:_____ Matrix/Level:_____

List the %Rs, RPD of the compounds which do not meet the QC criteria.

MS OR MSD	COMPOUND	% R	RPD	QC LIMITS	ACTION

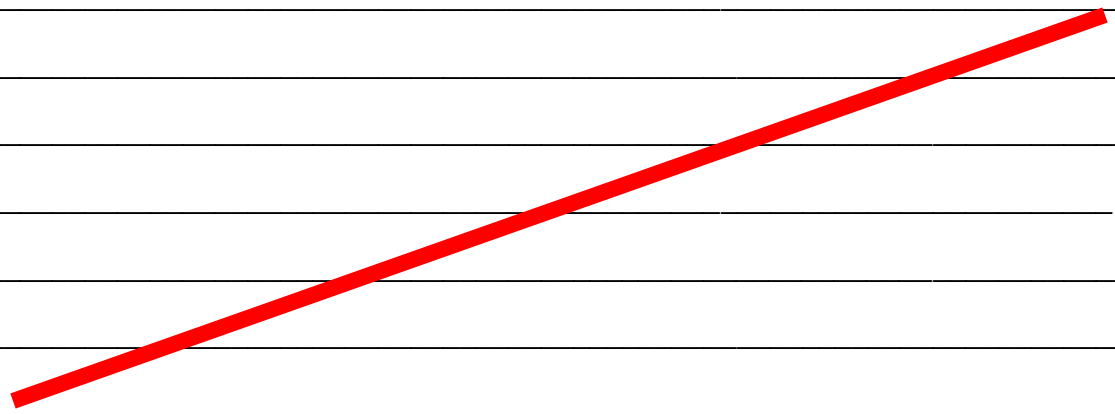
No action is taken on MS/MSD results alone to qualify the entire case. However, used informed professional judgment, the data reviewer may use the MS/MSD results in conjunction with other QC criteria and determine the need for some qualification of the data. In those instances where it can be determined that the results of the MS/MSD affect only the sample spiked, the qualification should be limited to this sample alone. However, it may be determined through the MS/MSD results that the laboratory is having a systematic problem in the analysis of one or more analytes, which affects the associated samples.

All criteria were met ____
Criteria were not met and/or see below _____

2. MS/MSD – Unspiked Compounds

List the concentrations of the unspiked compounds and determine the % RSDs of these compounds in the unspiked sample, matrix spike, and matrix spike duplicate.

COMPOUND	CONCENTRATION SAMPLE	MS	MSD	%RPD	ACTION



Criteria: None specified, use %RSD $\leq$ 50 as professional judgment.

Actions:

If the % RSD > 50, qualify the results in the spiked sample as estimate (J).
If the % RSD is not calculable (NC) due to nondetect value in the sample, MS, and/or MSD, use professional judgment to qualify sample data.

A separate worksheet should be used for each MS/MSD pair.

All criteria were met ____
Criteria were not met and/or see below _____

VIII. LABORATORY CONTROL SAMPLE (LCS/LCSD) ANALYSIS

This data is generated to determine accuracy of the analytical method for various matrices.

1. LCS Recoveries Criteria

List the %R of compounds which do not meet the criteria

LCS ID	COMPOUND	% R	QC LIMIT	ACTION

Criteria:
* Use laboratory QC limits (LL = lower limit, UL = upper limit).
* Refer to QAPP for specific criteria.

Actions:
Actions on LCS recovery should be based on both the number of compounds that are outside the %R criteria and the magnitude of the exceedance of the criteria.

If the %R of the analyte is > UL, qualify all positive results (J) for the affected analyte in the associated samples and accept nondetects.
If the %R of the analyte is < LL, qualify all positive results (J) and reject (R) nondetects for the affected analyte in the associated samples.
If more than half the compounds in the LCS are not within the required recovery criteria, qualify all positive results as (J) and reject nondetects (R) for all target analyte(s) in the associated samples.

2. Frequency Criteria:

Where LCS analyzed at the required frequency and for each matrix (1 per 20 samples per matrix)? **Yes** or No.
If no, the data may be affected. Use professional judgment to determine the severity of the effect and qualify data accordingly. Discuss any actions below and list the samples affected. Discuss the actions below:

All criteria were met ____
Criteria were not met and/or see below _____

IX. FIELD DUPLICATE PRECISION

Sample IDs: _____ Matrix:_____

Field duplicates samples may be taken and analyzed as an indication of overall precision. These analyses measure both field and lab precision; therefore, the results may have more variability than laboratory duplicates which measures only laboratory performance. It is also expected that soil duplicate results will have a greater variance than water matrices due to difficulties associated with collecting identical field duplicate samples.

COMPOUND	SQL	SAMPLE CONC.	DUPLICATE CONC.	RPD	ACTION

Criteria:

The project QAPP should be reviewed for project-specific information.
RPD $\pm$ 30% for aqueous samples, RPD $\pm$ 50 % for solid samples if results are $\geq$ SQL.
If both samples and duplicate are <5 SQL, the RPD criteria is doubled.

SQL = soil quantitation limit

Actions:

If both the sample and the duplicate results are nondetects (ND), the RPD is not calculable (NC). No action is needed.

Qualify as estimated positive results (J) and nondetects (UJ) for the compound that exceeded the above criteria.

If one sample result is not detected and the other is $\geq$ 5x the SQL qualify (J/UJ).

Note: If SQLs for the sample and duplicate are significantly different, use professional judgment to determine if qualification is appropriate.

If one sample value is not detected and the other is < 5x the SQL, use professional judgment to determine if qualification is appropriate.

All criteria were met ____
Criteria were not met and/or see below _____

IX. LABORATORY DUPLICATE PRECISION

Sample IDs: _____ Matrix:_____

Laboratory duplicates samples may be taken and analyzed as an indication of overall precision. These analyses measure both field and lab precision; therefore, the results may have more variability than laboratory duplicates which measures only laboratory performance. It is also expected that soil duplicate results will have a greater variance than water matrices due to difficulties associated with collecting identical field duplicate samples.

COMPOUND	SQL	SAMPLE CONC.	DUPLICATE CONC.	RPD	ACTION

Criteria:

The project QAPP should be reviewed for project-specific information.
RPD $\pm$ 30% for aqueous samples, RPD $\pm$ 50 % for solid samples if results are $\geq$ SQL.
If both samples and duplicate are <5 SQL, the RPD criteria is doubled.

SQL = soil quantitation limit

Actions:

If both the sample and the duplicate results are nondetects (ND), the RPD is not calculable (NC). No action is needed.

Qualify as estimated positive results (J) and nondetects (UJ) for the compound that exceeded the above criteria.

If one sample result is not detected and the other is $\geq$ 5x the SQL qualify (J/UJ).

Note: If SQLs for the sample and duplicate are significantly different, use professional judgment to determine if qualification is appropriate.

If one sample value is not detected and the other is < 5x the SQL, use professional judgment to determine if qualification is appropriate.

All criteria were met _____
Criteria were not met and/or see below _____

X. INTERNAL STANDARD PERFORMANCE

The assessment of the internal standard (IS) parameter is used to assist the data reviewer in determining the condition of the analytical instrumentation.

List the internal standard area and/or retention times (RT) which do not meet the criteria for IS performance.

DATE	SAMPLE ID	IS OUT	IS AREA/RT	ACCEPTABLE RANGE	ACTION

Criteria:
* IS area of +100% or -50% of the IS area in the associated calibration standard (CCAL).
* Retention time (RT) within 30 seconds of the IS area in the associated calibration standard (CCAL).

Actions:
If an IS is outside the QC limit, it is recommended reanalysis to confirm that the noncompliance is due to sample matrix effects rather than laboratory differences.

Validation actions should be applied to compounds quantitated with the out of control IS as follows:

QUALITY	IS AREA < -10%	IS AREA = -10 % TO – 50%	IS AREA > + 100%
Positive results	J	J	J
Nondetected results	R	UJ	ACCEPT

If a IS retention time varies more than 30 seconds, the chromatographic profile for that sample must be examined to determine if any false positive or negative exists. For shifts of a large magnitude, the reviewer may consider partial or total rejection of the data for the sample fraction. Discuss actions below:

All criteria were met ____
Criteria were not met and/or see below _____

XI. COMPOUND IDENTIFICATION

The compound identification evaluation is to verify that the laboratory correctly identified target analytes as well as tentatively identified compounds (TICs).

1. Verify that the target analytes were within the retention time windows.

Verify that the quantitation of the target analytes and/or TICs using the correct internal standards.

If target analytes and/or TICs were not correctly identified, request that the laboratory resubmit the corrected data.

All criteria were met ____
Criteria were not met and/or see below _____

XII. QUANTITATION LIMITS AND SAMPLE RESULTS

The sample quantitation evaluation is to verify laboratory quantitation results.

1. In the space below, please show a minimum of one sample calculation:

2. If requested, verify that the results were above the laboratory method detection limit (MDLs).

3. If dilutions performed, were the SQLs elevated accordingly by the laboratory? List the affected samples and dilution factor in the table below.

SAMPLE ID	DILUTION FACTOR	REASON FOR DILUTION
BEL-1305093	100 X	Matrix interference

If dilution was not performed, estimate results (J) for the affected compounds. List the affected samples/compounds:

_____
_____

Project Number:_____ Date:_____

REVIEW OF VOLATILE ORGANIC PACKAGE

The following guidelines for evaluating volatile organics were created to delineate required validation actions. This document will assist the reviewer in using professional judgment to make more informed decision and in better serving the needs of the data users. The sample results were assessed according to USEPA data validation guidance documents in the following order of precedence: USEPA Region 2, SOP HW-24, Standard Operating Procedure for the Validation of Organic Data Acquired using SW-846 Method 8260B (August, 2009-Revision 2), the USEPA National Functional Guidelines for Low/Medium Concentration Organic Data Review (SOW SOM01.2 SOP HW-33, August 2009 – Revision 2), the USEPA National Functional Guidelines for Organic Data Review for Low Concentration Water (SOP HW-13, August, 2009-Revision 3). Also, QC criteria from "Test Methods for Evaluating Solid Waste, Physical/Chemical Methods SW-846 (Final Update III, December 1996)," specifically for Methods 8000/8260B are utilized. The QC criteria and data validation actions listed on the data review worksheets are from the primary guidance document, unless otherwise noted.

The hardcopied (laboratory name) _____ data package received has been reviewed and the quality control and performance data summarized. The data review for VOCs included:

Lab. Project/SDG No.: _____ Sample matrix: _____
No. of Samples: _____
Trip blank No.: _____
Field blank No.: _____
Equipment blank No.:_____
Field duplicate No.:_____

_____ Data Completeness
_____ Holding Times
_____ GC/MS Tuning
_____ Internal Standard Performance
_____ Blanks
_____ Surrogate Recoveries
_____ Matrix Spike/Matrix Spike Duplicate
_____ Laboratory Control Spikes
_____ Field Duplicates
_____ Calibrations
_____ Compound Identifications
_____ Compound Quantitation
_____ Quantitation Limits

Overall Comments:_____
_____

Definition of Qualifiers:

J- Estimated results
U- Compound not detected
R- Rejected data
UJ- Estimated nondetect

Reviewer:_____ Date:_____

DATA COMPLETENESS

MISSING INFORMATION DATE LAB. CONTACTED DATE RECEIVED

All criteria were met _____
Criteria were not met
and/or see below _____

HOLDING TIMES

The objective of this parameter is to ascertain the validity of the results based on the holding time of the sample from time of collection to the time of analysis.

Complete table for all samples and note the analysis and/or preservation not within criteria

SAMPLE ID	DATE SAMPLED	DATE ANALYZED	pH	ACTION

Criteria

Aqueous samples – 14 days from sample collection for preserved samples (pH $\leq$ 2, 4^{o}C), no air bubbles.
Aqueous samples – 7 days from sample collection for unpreserved samples, 4^{o}C, no air bubbles.
Soil samples- 14 days from sample collection.
Cooler temperature (Criteria: 4 $\pm$ 2 ^{o}C):

Actions

If the VOCs vial(s) have air bubbles, estimate positive results (J) and reject nondetects (R).
If the % solids of soil samples is 10-50%, estimates positive results (J) and nondetects (UJ)
If the % solid of soil samples is < 10%, estimate positive results (J) and reject nondetects (R).
If holding times are exceeded but < 14 days beyond criteria, estimate positive results (J) and nondetects (UJ).
If holding times are exceeded but < 28 days beyond criteria, estimate positive results (J) and reject nondetects (R).
If holding times are grossly exceeded (> 28 days beyond criteria), reject all results (R).
If samples were not iced or if the ice were melted (> 10^{o}C), estimate positive results (J) and nondetects (UJ).

All criteria were met _____
Criteria were not met see below _____

GC/MS TUNING

The assessment of the tuning results is to determine if the sample instrumentation is within the standard tuning QC limits

___ The BFB performance results were reviewed and found to be within the specified criteria.

___ BFB tuning was performed for every 12 hours of sample analysis.

If no, use professional judgment to determine whether the associated data should be accepted, qualified or rejected.

List the samples affected: _____

If mass calibration is in error, all associated data are rejected.

All criteria were met _____
Criteria were not met
and/or see below _____

CALIBRATION VERIFICATION

Compliance requirements for satisfactory instrument calibration are established to ensure that the instrument is capable of producing and maintaining acceptable quantitative data.

Date of initial calibration:_____
Dates of continuing calibration:_____
Instrument ID numbers:_____
Matrix/Level:_____

DATE	LAB FILE ID#	CRITERIA OUT RFs, %RSD, %D, r	COMPOUND	SAMPLES AFFECTED

Criteria

All RFs must be > 0.05 regardless of method requirements for SPCC.
All %RSD must be $\leq$ 15 % regardless of method requirements for CCC.
All %Ds must be $\leq$ 20% regardless of method requirements for CCC.
It should be noted that Region 2 SOP HW-24 does not specify criterion for the curve correlation coefficient (r). A limit for r of $\geq$ 0.995 has therefore been utilized as professional judgment.

Actions

If any compound has an initial RF or a continuing RF of < 0.05, estimate positive results (J) and reject nondetects (R), regardless of method requirements.
If any compound has a %RSD > 15%, estimate positive results (J) and use professional judgment to qualify nondetects.
If any compound has a %RSD > 90%, estimate positive results (J) and reject nondetects (R).
If any compound has a % D > 20%, estimate positive results (J) and reject nondetects (R).
If any compound has a % D > 20%, estimate positive results (J) and nondetects (UJ).
If any compound has a % D > 90%, estimate positive results (J) and reject nondetects (R).
If any compound has r > 0.995, estimate positive results and nondetects.

A separate worksheet should be filled for each initial curve

All criteria were met _____
Criteria were not met
and/or see below _____

V A. BLANK ANALYSIS RESULTS (Sections 1 & 2)

The assessment of the blank analysis results is to determine the existence and magnitude of contamination problems. The criteria for evaluation of blanks apply only to blanks associated with the samples, including trip, equipment, and laboratory blanks. If problems with any blanks exist, all data associated with the case must be carefully evaluated to determine whether or not there is an inherent variability in the data for the case, or if the problem is an isolated occurrence not affecting other data.

List the contamination in the blanks below. High and low levels blanks must be treated separately.

Laboratory blanks

DATE ANALYZED	LAB ID	LEVEL/ MATRIX	COMPOUND	CONCENTRATION UNITS

Field/Equipment/Trip blank

DATE ANALYZED	LAB ID	LEVEL/ MATRIX	COMPOUND	CONCENTRATION UNITS

All criteria were met _____
Criteria were not met
and/or see below _____

V B. BLANK ANALYSIS RESULTS (Section 3)

Blank Actions

Action Levels (ALs) should be based upon the highest concentration of contaminant determined in any blank. Do not qualify any blank with another blank. The ALs for samples which have been diluted should be corrected for the sample dilution factor and/or % moisture, where applicable. No positive sample results should be reported unless the concentration of the compound in the samples exceeds the ALs:

ALs = 10x the amount of common contaminants (methylene chloride, acetone, 2-butanone, and toluene)
ALs = 5x for any other compounds

Specific actions are as follows:

If the concentration is < sample quantitation limit (SQL) and ≤ AL, report the compound as not detected (U) at the SQL.
If the concentration is ≥ SQL but ≤ AL, report the compound as not detected (U) at the reported concentration.
If the concentration is ≥ SQL and > AL, report the concentration unqualified.

Notes:

High and low level blanks must be treated separately
Compounds qualified "U" for blank contamination are still considered "hits" when qualifying for calibration criteria.

CONTAMINATION SOURCE/LEVEL	COMPOUND	CONC/UNITS	AL/UNITS	SQL	AFFECTED SAMPLES

All criteria were met _____
Criteria were not met
and/or see below _____

SURROGATE SPIKE RECOVERIES

Laboratory performance of individual samples is established by evaluation of surrogate spike recoveries. All samples are spiked with surrogate compounds prior to sample analysis. The accuracy of the analysis is measured by the surrogate percent recovery. Since the effects of the sample matrix are frequently outside the control of the laboratory and may present relatively unique problems, the validation of data is frequently subjective and demands analytical experience and professional judgment.
List the percent recoveries (%Rs) which do not meet the criteria for surrogate recovery.
Matrix: solid/aqueous

SAMPLE ID	**SURROGATE COMPOUND**				**ACTION**
	1,2-DCA	**DBFM**	**TOL-d8**	**BFB**	

QC Limits* (Aqueous)
_____LL_to_UL___ ____to_____ ___to_____ ___to_____ ___to_____
QC Limits* (Solid-Low)
_____LL_to_UL___ ____to_____ ___to_____ ___to_____ ___to_____
QC Limits* (Solid-Med)
_____LL_to_UL___ ____to_____ ___to_____ ___to_____ ___to_____

1,2-DCA = 1,2-Dichloromethane-d4 TOL-d8 = Toluene-d8
DBFM = Dibromofluoromethane BFB = Bromofluorobenzene

* QC limits are laboratory in-house performance criteria, LL = lower limit, UL = upper limit.
* If QC limits are not available, use limits of 80 – 120 % for aqueous and 70 – 130 % for solid samples.

Actions:

QUALITY	%R < 10%	%R = 10% - LL	%R > UL
Positive results	J	J	J
Nondetects results	R	UJ	Accept

Surrogate action should be applied:
If one or more surrogate in the VOC fraction is out of specification, but has a recovery of > 10%.
If any one surrogate in a fraction shows < 10 % recovery.

All criteria were met _____
Criteria were not met
and/or see below _____

VII. A MATRIX SPIKE/MATRIX SPIKE DUPLICATE (MS/MSD)

This data is generated to determine long term precision and accuracy in the analytical method for various matrices. This data alone cannot be used to evaluate the precision and accuracy of individual samples. If any % R in the MS or MSD falls outside the designated range, the reviewer should determine if there are matrix effects, i.e. LCS data are within the QC limits but MS/MSD data are outside QC limit.

1. MS/MSD Recoveries and Precision Criteria

The laboratory should use one MS and a duplicate analysis of an unspiked field sample if target analytes are expected in the sample. If target analytes are not expected, MS/MSD should be analyzed.

List the %Rs, RPD of the compounds which do not meet the criteria.

Sample ID:_____ Matrix/Level:_____

MS OR MSD COMPOUND % R RPD QC LIMITS ACTION

==========

_____

_____

_____

_____

* QC limits are laboratory in-house performance criteria, LL = lower limit, UL = upper limit.

* If QC limits are not available, use limits of 70 – 130 %.

Actions:

QUALITY	%R < LL	%R > UL
Positive results	J	J
Nondetects results	R	Accept

MS/MSD criteria apply only to the unspiked sample, its dilutions, and the associated MS/MSD samples:

If the % R for the affected compounds were < LL (or 70 %), qualify positive results (J) and nondetects (UJ).

If the % R for the affected compounds were > UL (or 130 %), only qualify positive results (J).

If 25 % or more of all MS/MSD %R were < LL (or 70 %) or if two or more MS/MSD %Rs were < 10%, qualify all positive results (J) and reject nondetects (R).

A separate worksheet should be used for each MS/MSD pair.

All criteria were met _____
Criteria were not met
and/or see below _____

VII. B MATRIX SPIKE/MATRIX SPIKE DUPLICATE

MS/MSD – Unspiked Compounds

It should be noted that Region 2 SOP HW-24 does not specify a MS/MSD criteria for the unspiked compounds in the sample. A %RSD of < 50% has therefore been utilized as professional judgment.

If all target analytes were spiked in the MS/MSD, this review element is not applicable.

List the %RSD of the compounds which do not meet the criteria.

Sample ID:_____ Matrix/Level/Unit:_____

COMPOUND	SAMPLE CONC.	MS CONC.	MSD CONC.	% RSD	ACTION

Actions:

* If the % RSD > 50, qualify the positive result in the unspiked samples as estimated (J).
* If the % RSD is not calculated (NC) due to nondetected value, use professional judgment to qualify the data.

All criteria were met _____
Criteria were not met
and/or see below _____

VIII. LABORATORY CONTROL SAMPLE (LCS) ANALYSIS

This data is generated to determine accuracy of the analytical method for various matrices.

1. LCS Recoveries Criteria

Where LCS spiked with the same analyte at the same concentrations as the MS/MSD? Yes or No. If no make note in data review memo.

List the %R of compounds which do not meet the criteria

LCS ID COMPOUND % R QC LIMIT

_____
_____
_____
_____
_____
_____
_____
_____

* QC limits are laboratory in-house performance criteria, LL = lower limit, UL = upper limit.
* If QC limits are not available, use limits of 70 – 130 %.

Actions:

QUALITY	%R < LL	%R > UL
Positive results	J	J
Nondetects results	R	Accept

All analytes in the associated sample results are qualified for the following criteria.

If 25 % of the LCS recoveries were < LL (or 70 %), qualify all positive results (j) and reject nondetects (R).
If two or more LCS were below 10 %, qualify all positive results as (J) and reject nondetects (R).

2. Frequency Criteria:

Where LCS analyzed at the required frequency and for each matrix? Yes or No.
If no, the data may be affected. Use professional judgment to determine the severity of the effect and qualify data accordingly. Discuss any actions below and list the samples affected.

All criteria were met _____
Criteria were not met
and/or see below _____

IX. LABORATORY DUPLICATE PRECISION

Sample IDs:_____ Matrix:_____

Field duplicates samples may be taken and analyzed as an indication of overall precision. These analyses measure both field and lab precision; therefore, the results may have more variability than laboratory duplicates which only laboratory performance. It is also expected that soil duplicate results will have a greater variance than water matrices due to difficulties associated with collecting identical field duplicate samples.

The project QAPP should be reviewed for project-specific information.
Suggested criteria: RPD $\pm$ 30% for aqueous samples, RPD $\pm$ 50 % for solid samples. If both samples and duplicate are <5 SQL, the RPD criteria is doubled.

COMPOUND	SQL	SAMPLE CONC.	DUPLICATE CONC.	RPD	ACTION

Actions:

Qualify as estimated positive results (J) and nondetects (UJ) for the compound that exceeded the above criteria. For organics, only the sample and duplicate will be qualified.

If an RPD cannot be calculated because one or both of the sample results is not detected, the following actions apply:

If one sample result is not detected and the other is greater than 5x the SQL qualify (J/UJ).

If one sample value is not detected and the other is greater than 5x the SQL and the SQLs for the sample and duplicate are significantly different, use professional judgment to determine if qualification is appropriate.

If one sample value is not detected and the other is less than 5x, use professional judgment to determine if qualification is appropriate.

If both sample and duplicate results are not detected, no action is needed.

All criteria were met _____
Criteria were not met
and/or see below _____

IX. FIELD DUPLICATE PRECISION

Sample IDs:_____ Matrix:_____

Field duplicates samples may be taken and analyzed as an indication of overall precision. These analyses measure both field and lab precision; therefore, the results may have more variability than laboratory duplicates which only laboratory performance. It is also expected that soil duplicate results will have a greater variance than water matrices due to difficulties associated with collecting identical field duplicate samples.

The project QAPP should be reviewed for project-specific information.
Suggested criteria: RPD $\pm$ 30% for aqueous samples, RPD $\pm$ 50 % for solid samples. If both samples and duplicate are <5 SQL, the RPD criteria is doubled.

COMPOUND	SQL	SAMPLE CONC.	DUPLICATE CONC.	RPD	ACTION

Actions:

Qualify as estimated positive results (J) and nondetects (UJ) for the compound that exceeded the above criteria. For organics, only the sample and duplicate will be qualified.

If an RPD cannot be calculated because one or both of the sample results is not detected, the following actions apply:

If one sample result is not detected and the other is greater than 5x the SQL qualify (J/UJ).

If one sample value is not detected and the other is greater than 5x the SQL and the SQLs for the sample and duplicate are significantly different, use professional judgment to determine if qualification is appropriate.

If one sample value is not detected and the other is less than 5x, use professional judgment to determine if qualification is appropriate.

If both sample and duplicate results are not detected, no action is needed.

All criteria were met _____
Criteria were not met
and/or see below _____

X. INTERNAL STANDARD PERFORMANCE

The assessment of the internal standard (IS) parameter is used to assist the data reviewer in determining the condition of the analytical instrumentation.

List the internal standard area of samples which do not meet the criteria.

* Area of +100% or -50% of the IS area in the associated calibration standard.
* Retention time (RT) within 30 seconds of the IS area in the associated calibration standard.

DATE	SAMPLE ID	IS OUT	IS AREA	ACCEPTABLE RANGE	ACTION

Actions:

1. IS actions should be applied to the compound quantitated with the out-of-control ISs

QUALITY	IS AREA < -25%	IS AREA = -25 % TO – 50%	IS AREA > + 100%
Positive results	J	J	J
Nondetected results	R	UJ	ACCEPT

2. If a IS retention time varies more than 30 seconds, the chromatographic profile for that sample must be examined to determine if any false positive or negative exists. For shifts of a large magnitude, the reviewer may consider partial or total rejection of the data for the sample fraction.

All criteria were met _____
Criteria were not met
and/or see below _____

XII. SAMPLE QUANTITATION

The sample quantitation evaluation is to verify laboratory quantitation results. In the space below, please show a minimum of one sample calculation:

All criteria were met _____
Criteria were not met
and/or see below _____

XII. QUANTITATION LIMITS

A. Dilution performed

SAMPLE ID	DILUTION FACTOR	REASON FOR DILUTION

B. Percent Solids

List samples which have < 50 % solids

_____

_____

Actions:

If the % solids of a soil sample is 10-50%, estimate positive results (J) and nondetects (UJ)

If the % solids of a soil sample is < 10%, estimate positive results (J) and reject nondetects (R)